Tobacco Marketing in California's Retail Environment (2008-2011)

Final report for the California Tobacco Advertising Survey (2011)
Submitted to the California Tobacco Control Program,
California Department of Public Health

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EXECUTIVE SUMMARY

The purpose of the 2011 California Tobacco Advertising Study was to document changes in the promotion, price, and placement of cigarettes and chewing tobacco since 2008, as well as compliance with state-mandated age-of-sale signs. In 2011, the survey for the first time monitored marketing for menthol cigarettes separately from non-menthol cigarettes and examined marketing for snus, a smokeless tobacco product that does not involve chewing or spitting. It also tracked the retail availability of e-cigarettes, a type of electronic nicotine delivery system.

This report includes the following key findings:

- Compliance with state law improved: STAKE Act signs were present in 81 percent of stores, which was a significant increase from 2008.
- Tobacco advertisements at children's eye level were found in 34 percent of stores, which was a significant increase from 2008.
- Tobacco advertisements near candy were found in nine percent of stores, which was a significant increase from 2008.
- Stores contained an average of 20 tobacco marketing materials, about the same quantity as in 2008.
- Marketing materials for chewing tobacco displaced marketing materials for cigarettes: Stores contained an average of six marketing materials for chewing tobacco, a significant increase from 2008.
- E-cigarettes were sold in 12 percent of stores and nearly one third of those stores featured self-service displays.
- Approximately half of stores advertised a price promotion for cigarettes, which was a significant decrease from 2008.
- Price promotions for chewing tobacco did not decline: Approximately 10 percent of stores advertised a price promotion for chewing tobacco in 2008 and in 2011.
- The average price of premium brand cigarettes was approximately $5.60, which is equivalent to the price of a hot dog at a baseball stadium, and less than the price of a movie ticket.
- The increase in cigarette prices over time was significantly lower at pharmacies than at all other types of stores.
- Racial/ethnic and socioeconomic disparities in the visibility and price of menthol cigarettes persist. Menthol cigarettes were advertised more and cost less in African-American neighborhoods and in low-income neighborhoods.

Background

The California Tobacco Advertising Survey (CTAS) represents the longest-running tobacco marketing surveillance system in any state in the nation. The survey was last conducted in the summer of 2008, before the widespread introduction of snus to California stores, before the federal tax increase on cigarettes, and before new marketing regulations were mandated by the 2009 Family Smoking Prevention and Tobacco Control Act.

The proliferation of advertising and price discounts for tobacco products in the retail environment is among the most important ways the tobacco industry maintains its commercial influence in California. Since 2008, annual marketing expenditures for cigarettes decreased from $9.9 billion to $8.4 billion.(1) After Reynolds American and Philip Morris purchased the two largest smokeless tobacco companies, annual marketing expenditures on smokeless tobacco nearly doubled from $251 million in 2005 to $452 million in 2011, and increased from 1.9 percent to 5.1 percent of total tobacco marketing expenditures.(2) Assuming that spending is proportional to population size across states, this means that the industry spent approximately $1.07 billion in California on tobacco advertising and promotions in 2011, equivalent to about $28.30 per Californian.

With cigarettes and smokeless combined, the vast majority of marketing expenditures (81 percent of the $8.8 billion spent in 2011) was to reduce tobacco prices at the point of sale. In this report, we refer to advertised price reductions (e.g., "cents-off," "buy one get one free," and other discounts) as price promotions.

In spite of its importance to the tobacco industry, or perhaps because of it, the retail environment is the least regulated channel for tobacco marketing.(3) The retail availability and visibility of tobacco products makes it more likely that adolescents will try smoking and less likely that smokers will succeed in quitting.

California is one of only a handful of states that routinely monitors tobacco industry activity at the point of sale, even though such surveillance is essential to inform evidence-based policy making. The purpose of the 2011 CTAS was to document changes in the promotion, price, and placement of cigarettes and chewing tobacco since 2008, as well as compliance with state-mandated age-of-sale signs. In 2011, the survey for the first time monitored marketing for menthol cigarettes separately from non-menthol cigarettes, examined marketing for snus, and tracked the retail availability of electronic nicotine delivery systems, known as e-cigarettes.

Surveillance Methods

CTAS is a longitudinal cohort study of California stores that sell cigarettes. Following eligibility criteria that were established previously, the sampling excluded stores that required either club membership (e.g., Costco or golf courses) or had minimum-age restrictions (e.g., bars). Also excluded were stores that were unusual store categories that were unlikely to display or advertise tobacco products, such as donut shops. Since 2000, standardized observations of tobacco marketing materials in stores were made at seven time points (in 2000, annually from 2002 to 2005, in 2008, and in 2011). This report uses CTAS data collected in 2008 and 2011.

Sample: The baseline sample (CTAS 2008) is historical. The original sample was derived from a 1997 list of 40,186 cigarette retailers, as enumerated by the California Board of Equalization (BOE). The sample stores and addresses were matched to the 2011 retailer licensing list, which was supplied by the BOE to the California Tobacco Control Program. Of the 545 stores with valid data in 2008, 442 (81.1 percent) were verified by phone as still selling cigarettes. A randomly selected list of stores from the 2011 licensing list was also phone verified. This list was used to replace all 2008 stores that were no longer in business or no longer sold cigarettes. It was also used to increase the sample size by approximately 100 stores in order to better detect differences between store types. Figure 1 (see Appendix A) illustrates the location of the stores in the longitudinal sample with respect to population density per county.

This report describes changes in tobacco product promotion, price, and placement since 2008. New to this report are data about the availability of tobacco products, marketing of menthol cigarettes, and a shift in data collection from recording tobacco marketing data by company to recording by brand and flavor (menthol).

Measures:

See Appendix B for the store observation survey instrument. This section describes the measures that are central to this report.

Store type: Stores were classified into one of seven categories: chain convenience with gas, chain convenience without gas, pharmacy, gas only (kiosk without interior shopping section), liquor store, small market (fewer than three cash registers), and supermarket (at least three cash registers).

Product availability: Product availability was new to the 2011 data collection. In previous years, availability was inferred from the presence of advertising, but in 2011 it was assessed directly. By definition, all stores in the study sold cigarettes. Availability of cigarillos, little cigars, or cigars (all treated as one category), chewing tobacco (including moist snuff), snus, and e-cigarettes were recorded.

Placement: Self-service display of e-cigarettes was recorded, as well as whether or not cigarettes were visible to customers. Presence of signs near candy (within six inches) was recorded for cigarettes and other tobacco products, separately. Coders counted interior signs, displays, and functional items for cigarettes and smokeless tobacco at or below three feet. Outside the store, presence of signs and functional items at or below three feet was recorded.

Promotion: This section considers types of marketing materials, advertised price promotions, and countermarketing (e.g., age-of-sale signage). All variables were coded separately for the store exterior and interior.

As in previous years, coders counted the total number of cigarette marketing materials, including branded signs (e.g., posters, shelf labels, decals or stickers) shelving units, displays (portable displays that hold cigarette packs or chew), and functional items (e.g., trashcans and coin trays). In 2008, shelf tags that advertised promotions for grocery store club members were recorded separately, and were dropped from the 2011 data collection. In 2011, advertisements, display and function items were coded separately for chewing tobacco and snus. Thus total marketing materials for cigarettes includes advertisements, displays, functional items, and shelving units. However, for chewing tobacco and snus, total marketing materials include advertisements, displays, and functional items. Shelving units was not a category for chewing tobacco or snus, as branded shelving units are not found for these products.

For advertisements and displays, coders noted product type, location, and existence of a promotion. For exterior advertisements, the two location options were on window/door or other (gas pump, sidewalk, building side), which was new in 2011.

Type of promotion was categorized as: multipack discount, other special price, both, or none. Special price and multi-pack discount promotion presence was noted for each advertisement and display, but carton prices were not considered. A special price promotion was defined as wording on an advertisement or display indicating a special price, such as: “special value”, “special offer”, “on sale” or “reduced price.” Promotional offers for free products with the purchase of a product, or discount when purchased at a certain quantity were recorded as multi-pack discounts (e.g., buy-one-get-one free). A category for both was added to the 2011 protocol, but in 2008 such advertisements were all recorded as a multi-pack discount.

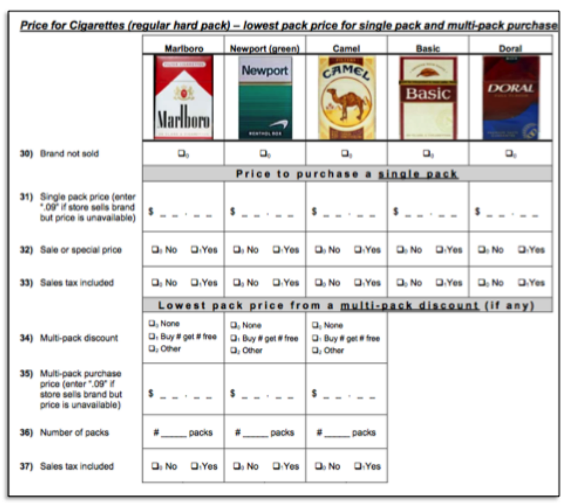
Brand and flavor information were also recorded for each marketing material, but only for cigarettes. The four brand categories were: Marlboro, Camel, Newport, and other. Flavor was classified as: regular, menthol, or both.

Functional items for cigarettes, chewing tobacco and snus were counted. Displays for cigarettes, chewing tobacco and snus were counted and existence of price promotion was also noted. Shelving unit data was collected for cigarettes only. Cigarette functional items, display, and shelving units were categorized by brand (Marlboro, Newport, Camel and other).

Countermarketing: Consistent with previous years, the type and location of age-of-sale signs were recorded.

Price: As in previous years, price data were collected for three premium brands: Marlboro (the leading premium brand from Philip Morris USA and the largest market share of all non-menthol cigarette brands studied); Camel (the leading premium brand for Reynolds American) and Newport (the largest market share of menthol and leading premium brand from Lorillard). Data were also collected for two discount brands: Basic and Doral. GPC was dropped from the data collection in 2011 because of diminishing market share and low availability in 2008. The protocol for collecting lowest-per-pack price was comparable to previous years. Coders computed the lowest-per-pack price (excluding cartons), indicated whether the price was discounted and noted whether sales tax was included. When the price was from a multipack discount, the total price and number of packs was recorded. In 2011, coders also recorded the price to purchase a single pack, indicated whether the price was discounted, and indicated whether the price included sales tax (see Figure 2). In San Francisco stores, the data collection worksheet included an additional item about whether the local litter mitigation fee was included in the price.

Figure 2: Prices: Single-pack and lowest-per-pack


Price for Cigarettes (regular hard pack) – lowest pack price for single pack and multi-pack purchase

	Marlboro	Newport (green)	Camel	Basic	Doral
30) Brand not sold	❑	❑	❑	❑	❑
	Price to purchase a single pack				
31) Single pack price (enter ".09" if store sells brand but price is unavailable)	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _
32) Sale or special price	❑ No ❑ Yes	❑ No ❑ Yes	❑ No ❑ Yes	❑ No ❑ Yes	❑ No ❑ Yes
33) Sales tax included	❑ No ❑ Yes	❑ No ❑ Yes	❑ No ❑ Yes	❑ No ❑ Yes	❑ No ❑ Yes
	Lowest pack price from a multi-pack discount (if any)				
34) Multi-pack discount	❑ None ❑ Buy # get # free ❑ Other	❑ None ❑ Buy # get # free ❑ Other	❑ None ❑ Buy # get # free ❑ Other		
35) Multi-pack purchase price (enter ".09" if store sells brand but price is unavailable)	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _		
36) Number of packs	# _____ packs	# _____ packs	# _____ packs		
37) Sales tax included	❑ No ❑ Yes	❑ No ❑ Yes	❑ No ❑ Yes		

Data collection: Six data collectors from Ewald & Wasserman Research, LLC (San Francisco) were trained using a combination of classroom and field training. Data were collected between October and December, 2011. To assess inter-rater reliability, two different coders visited seven percent of stores (n=40) on separate occasions. Reliability was very high (see Table 15) and consistent with other studies (4).

Analysis:

The focus of the analyses was to describe change over time and to relate changes in retail tobacco marketing to neighborhood demographics. Descriptive statistics are summarized for each product, by year and/or by store type. For all analyses, convenience stores with and without gasoline were collapsed into one category. All computed variables for promotion are also summarized (e.g., proportion of total materials for chewing tobacco/snus/cigarettes, proportion for menthol). Pack prices represent the price before sales tax and 2008 prices were adjusted to reflect 2011 dollars based on the consumer price index.

Tests of significance were conducted on indicators that have been tracked consistently over time, including presence of STAKE ACT signage, tobacco advertising near candy and at or below three feet, quantity of marketing materials, availability of price promotions, and cigarette prices.

Racial/ethnic and socioeconomic disparities: In previous years, neighborhood was defined by the census tract where each observed store was located. In this report, neighborhood was defined as a store-centered buffer. Using ArcGIS (version 9.3), we created 800-meter service areas around each store (i.e. the distance you could walk/drive in any direction from each store). These neighborhoods were characterized by 2008 intercensal estimates (Geolytics, Inc.) for age, race/ethnicity, median household income, and population density, all weighted in proportion to tract area. Demographic data from store-centered and census-defined neighborhoods are highly correlated, but less so in urban areas than elsewhere. An advantage of a store-centered definition is avoiding geographic clustering of multiple stores in the same tract.

Cross-sectional analyses examined neighborhood differences in the quantity of marketing materials and cigarette prices, using ordinary least squares regression. Neighborhoods covariates of interest were included in the models as quartiles, which allowed for easier interpretation and visual presentation of results.

Multilevel modeling was used to examine neighborhood correlates of variation in change (2008 to 2011) for the number of cigarette marketing materials per store, availability of a cigarette price promotion, proportion of marketing materials for chewing tobacco, and lowest per pack price for Marlboro, Newport, and Camel.

In the multilevel models, observations at each time point were viewed as nested within stores. Thus, the models specified time points and outcome measures at level 1, and neighborhood characteristics and store type included at level 2. The sole level 1 predictor was time, which was coded 0 for 2008 and 3 for 2011. Therefore, the intercept corresponded to estimated values in 2008, and the coefficient for time estimated annual change between 2008 and 2011 (e.g., estimated annual change in price and marketing materials). Level 2 predictors were store type and neighborhood demographics (percent of residents under 18 years, percent of African-American residents, percent of Hispanic residents, median household income, and population density), which were treated as time invariant. These numeric variables were grand mean centered rather than quartiled because of concerns about model over-parameterization. Store type was dummy coded, with the most prevalent store type (convenience) as the referent category.

A hierarchical linear model was fit for numeric outcomes (total cigarette marketing materials, proportion of marketing materials for chewing tobacco, and prices), and for binary outcomes a hierarchical generalized linear model (availability of a cigarette promotion). As the goal of the analysis was to examine neighborhood correlates of change, the slope for time was allowed to randomly vary. Analyses were performed using SPSS 21, with the exception of multi-level modeling which was performed using HLM 7.0.

Computing difference scores (e.g. the number of cigarette advertisements in 2011 minus the number in 2008 for each store) is another possible strategy for longitudinal analyses. However, we did not use this approach because approximately 25 percent of the sample could not be surveyed at follow-up.

Results

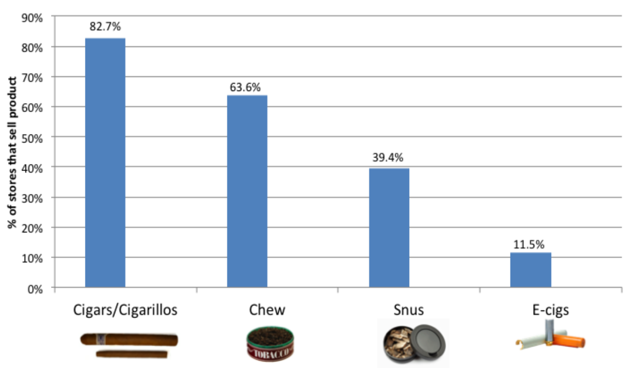
Section 1 summarizes product availability for 2011 only. Section 2 summarizes sample attrition from 2008 to 2011.

Sections 3-5 summarize results for 2011 and change since 2008 for product placement, promotion, and cigarette prices.

Section 1: PRODUCT AVAILABILITY (2011)

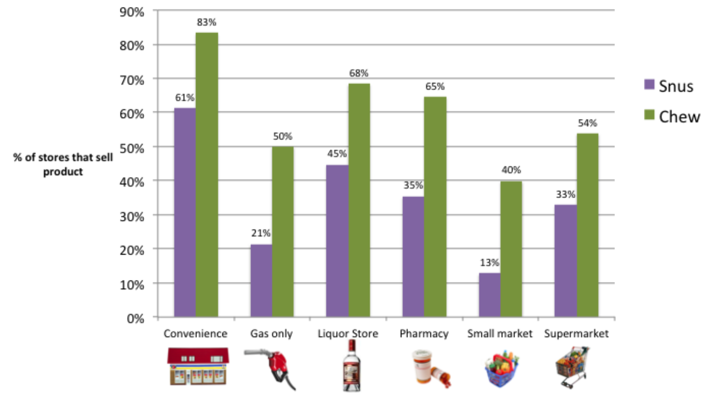
- Cigars/cigarillos could be found almost everywhere that cigarettes were sold (see Figure 3).
- Chewing tobacco was available in 64 percent of stores, snus in 39 percent and e-cigarettes in 12 percent (see Figure 3).
- Chewing tobacco was available in more than half of stores in all categories of store type except small markets (see Figure 4).
- Snus was available in a majority of convenience stores and in less than half of stores in all other store-type categories (see Figure 4).
- E-cigarettes (E-cigs) were sold in approximately 15 percent of convenience stores, liquor stores, and pharmacies, but were less available in other store types (see Appendix A, Table 1).

Figure 3: Product availability in 2011 (n=566)



Tracking product availability was a useful addition to tobacco marketing surveillance. In 2011, 23 percent of the stores that sold chewing tobacco or snus did not advertise the products, indicating that advertising presence should not substitute for product presence. For this reason, we did not examine change in availability of chewing tobacco as measured in 2008.

Figure 4: Smokeless availability by store type, 2011



Section 2: ATTRITION

Of the 545 stores with valid data in 2008, 132 stores were lost to follow-up (see Figure 5). All 698 stores with data for at least one time point (2008 or 2011) are included in the multilevel modeling. In the longitudinal sample (n=698), the distribution of store types was: 33.8 percent chain convenience, 23.1 percent small markets, 19.6 percent liquor stores, 10.6 percent supermarkets, 8.2 percent pharmacies, and 4.7 percent gas kiosks.

Figure 5: Longitudinal Sample (n=698)

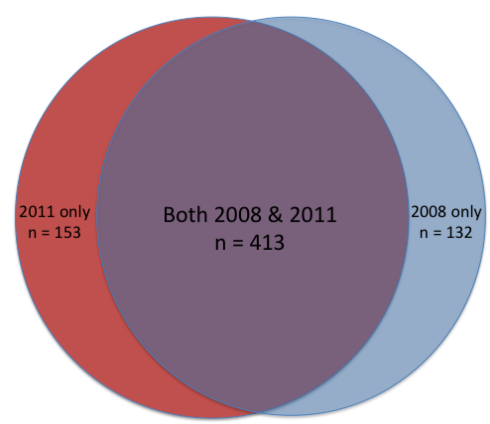
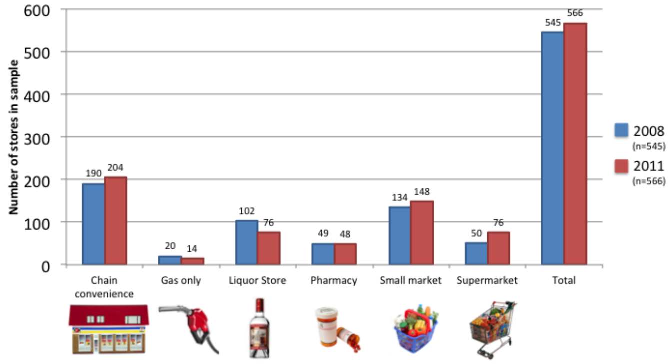


Figure 6 shows that attrition rates varied by store type. The greatest difference was for liquor stores, which were 18.7 percent of the 2008 sample and 13.4 percent of the 2011 sample.

Figure 6: Sample composition in 2008 and 2011



Section 3: PLACEMENT

This section summarizes changes in the presence of low-height advertising (at or below three feet) and the presence of advertising near candy. New to 2011 data collection is the visibility of cigarettes to customers and the availability of e-cigarettes by self-service.

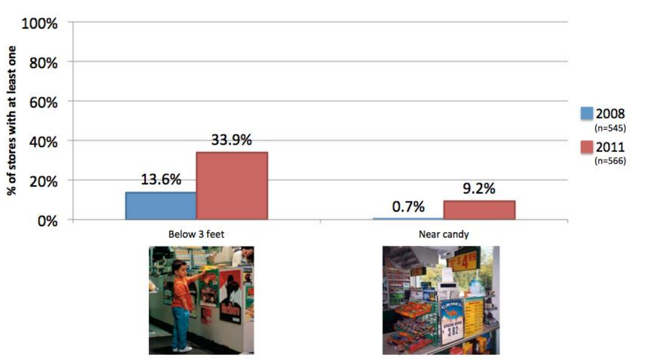
- The proportion of stores with any low-height tobacco advertising (at or below three feet) increased significantly from 14 percent in 2008 to 34 percent in 2011 ($p<.01$)(See Figure 7).

- The proportion of stores with any tobacco advertising near candy also increased significantly from less than 1 to 9 percent ($p<.01$)(See Figure 7).

- In 2011, nearly half of convenience stores (47 percent) contained at least one tobacco advertisement at or below three feet, and 10 percent placed tobacco advertisements near candy. The proportion with low-height advertisements increased from 16 percent in 2008 and the proportion with advertisements near candy increased from less than one percent in 2008 (see Table 2 and Table 3).

- The proportion of supermarkets and liquor stores with at least one low-height tobacco advertisement more than doubled from 2008 to 2011 (see Table 2).

Figure 7: Placement, any tobacco advertisement below three feet or near candy



- In 2011, only eight percent of stores shelved cigarettes exclusively in an overhead bin or under the counter so that the products were not visible to customers.

- Of the 65 stores that sold e-cigarettes, 29 percent had self-service displays, meaning that e-cigarettes were available on the counter within reach of customers rather than accessible only to merchants.

Section 4: PROMOTION

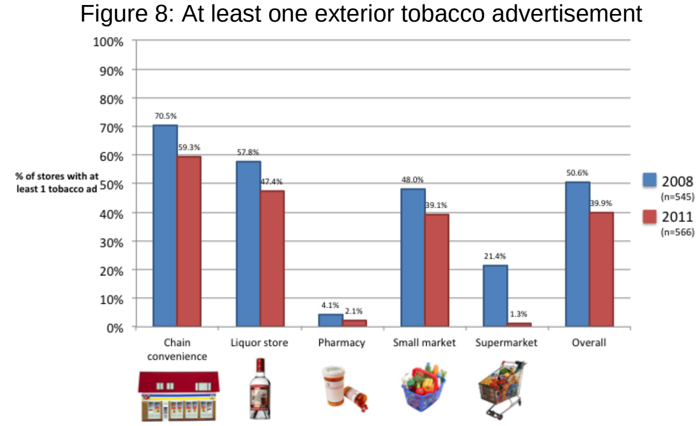
Marketing materials

This section describes changes in the quantity and nature of marketing materials, by location (on windows/door, other exterior, or interior) and by product type. ***The term marketing materials refers to the sum of advertisements, branded displays, functional items and shelving units. The term advertising refers to the subset of marketing materials that are signs.*** *The term “tobacco” refers to the combination of cigarettes and observed smokeless products (both chewing tobacco and snus in 2011, only chewing tobacco in 2008. Data on marketing materials for cigarillos, little cigars, cigars and e-cigarettes were not collected).*

- Storefront advertising for tobacco products was less visible in 2011 than in 2008. Overall, the proportion of stores with at least one exterior tobacco advertisement decreased from 50.8 percent to 39.8 percent (see Figure 8).

- The decrease was apparent in all types of stores, especially at supermarkets (see Figure 8).

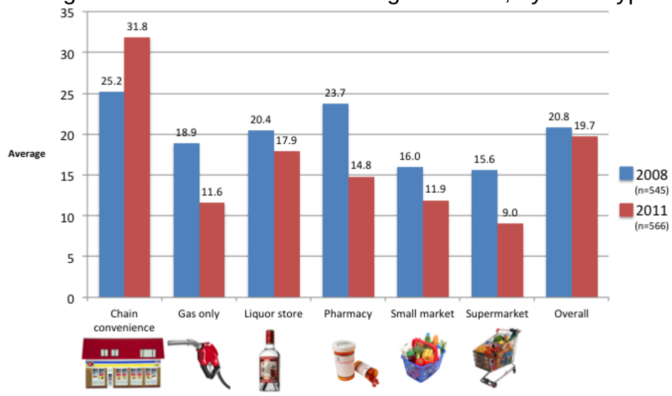
Figure 8: At least one exterior tobacco advertisement



- In 2011, the majority of exterior tobacco advertisements (85 percent) were located on store windows or doors and 35 percent of stores had at least one such advertisement.

- In 2011, stores contained an average of 19.7 (SD=19.4) tobacco marketing materials. The average per store did not differ significantly from 2008 (mean=20.8, SD=15.0) (see Figure 9).

Figure 9: Total tobacco marketing materials, by store type



Marketing materials: Cigarettes

- The number of cigarette marketing materials per store decreased from 17.6 (SD=11.2) in 2008 to 13.2 (SD=10.9) in 2011 (see Table 4). This decrease was statistically significant ($p<.01$).

- The decrease in cigarette marketing materials per store was not constant across all types of stores. The annual decrease in cigarette marketing materials was significant in supermarkets (3.7 marketing materials per year), in small markets (2.3 per year) and in pharmacies (1.9 per year). However, cigarette marketing materials did not decrease significantly in convenience stores (2008 mean=20.6, SD=11.1; 2011 mean=18.6, SD=9.7) (see Table 4 and Table 9).

- The decrease in cigarette marketing materials per store was not constant across neighborhoods. The size of the decrease depended on the neighborhood demographics, including percent of Hispanic residents and median household income. Decreases between 2008 and 2011 were significantly greater in Hispanic neighborhoods: The more Hispanic residents in a neighborhood, the greater the decrease in marketing materials. For each 10 percentage point difference in the proportion of Hispanic residents (e.g., from an average of 39 percent to 49 percent), the annual decrease was 0.2 marketing materials greater (e.g., a difference of half of an advertisement over three years) (see Table 9). The same pattern was observed for neighborhoods with a higher median household income.

- Cigarette-branded functional items were less prevalent in 2011: the proportion of stores with one or more of these decreased from 11.0 percent in 2008 to three percent in 2011.

- In 2011, there were more marketing materials per store for Marlboro (mean=4.9, SD=4.3) than for Camel (mean=1.6, SD=2.5) and Newport (mean=1.3, SD= 2.3). This pattern is consistent with previous years and with the relative market share of these brands (see Table 7).

- On average, stores contained 2.9 advertisements for menthol cigarettes (SD=3.8) (see Table 8). The average proportion of cigarette advertisements for any menthol variety was 22.8 percent (SD=21.4, maximum=100 percent) (see Table 8). These measures were new in 2011.

- In 2011, there were significantly more menthol advertisements at stores in neighborhoods with a higher proportion of African-American residents (see Figure 10) and in low-income neighborhoods (see Figure 11).

- There were significantly more menthol advertisements per store in neighborhoods with moderate proportions of Hispanic residents in 2011 (see Figure 10). This different pattern may reflect the fact that neighborhoods with the highest quartile of Hispanics have smaller proportions of African-Americans and Asian Pacific-Islanders, groups that have traditionally been targets for menthol marketing.

Figure 10: Advertisements per store for menthol, all cigarettes, by proportion of African-American and Hispanic residents, 2011

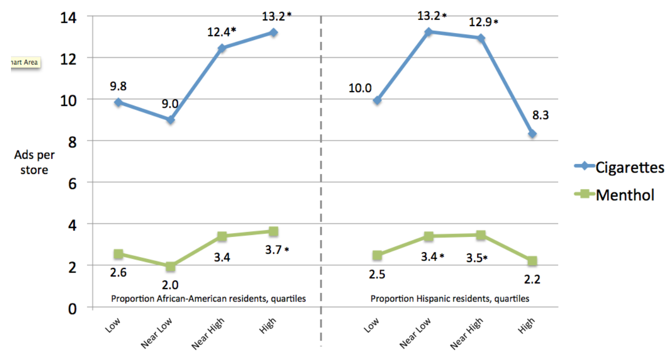
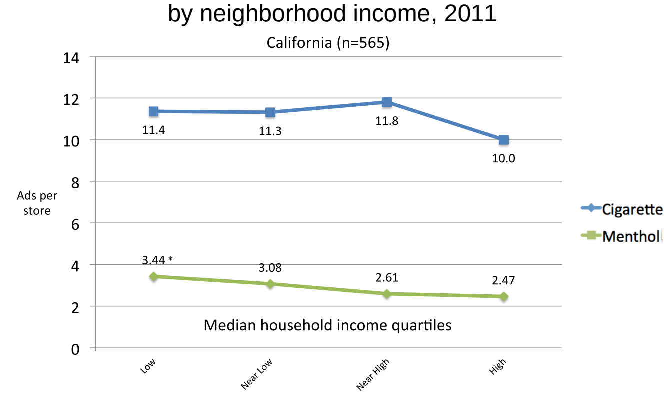


Figure 11: Advertisements per store for menthol and all cigarettes, by neighborhood income, 2011



Marketing materials: Chewing tobacco

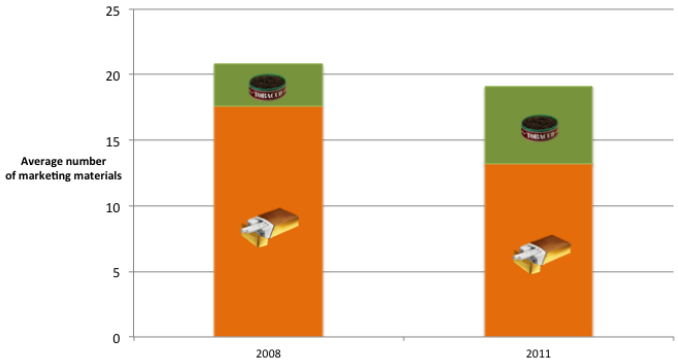
- The proportion of all stores with at least one marketing material for chewing tobacco increased significantly from 35 percent in 2008 to 48 percent in 2011 ($p < 0.01$).

- Both the average number of marketing materials for chewing tobacco and proportion of all marketing materials for chewing tobacco increased (see Figure 12).

- For chewing tobacco, the average number of marketing materials per store increased significantly from 3.2 (SD=7.1) in 2008 to 5.9 (SD=11.3) in 2011 ($p<.01$) (see Table 4).

- The proportion of total marketing materials for chewing tobacco increased from 10.0 percent (SD=17.1) in 2008 to 18.4 percent (SD=23.3) in 2011 (See Figure 12).

Figure 12: Change in proportion of marketing materials for chewing tobacco



- In both 2008 and 2011, convenience stores contained more marketing materials for chewing tobacco than other store types (2008 mean=4.6, SD=8.2; 2011 mean=11.9, SD=15.2) (See Table 4).

- The estimated annual rate of change in the proportion of marketing materials for chewing tobacco was not constant across store types. In convenience stores, the annual increase in the percent of tobacco marketing materials for chewing tobacco was 5 percentage points per year (p<0.01). The annual increase was greater in convenience stores than in all other store types (see Table 10).

Countermarketing

- Compliance with state law improved: The presence of at least one STAKE Act sign increased significantly from 66 percent of stores in 2008 to 81 percent in 2011 (p<.001).

- Industry-produced age-of-sale signs were less prevalent in 2011: The presence of We Card signs from Philip Morris decreased from 94 percent of stores in 2008 to 80 percent of stores in 2011.

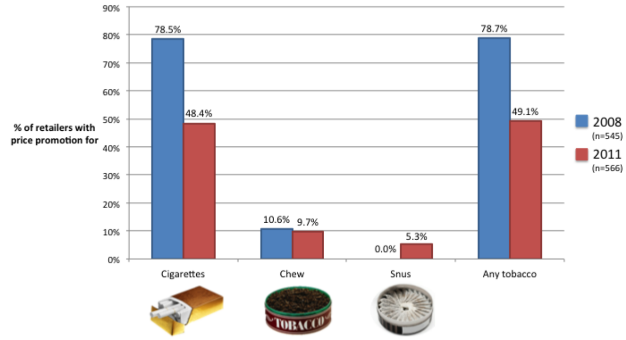
Price promotions

- The availability of price promotions for cigarettes decreased significantly from 78.5 percent of stores in 2008 to 48.4 percent in 2011 (p<.001). This decline was not observed for chewing tobacco: Approximately 10 percent of all stores advertised price promotions in both years (see Figure 13 and Table 11).

- The percent of all cigarette advertisements with a price promotion decreased dramatically from 48.6 percent in 2008 to 15.0 percent in 2011 (data not shown).

- In 2011, 15.3 percent of the 360 stores that sold chewing tobacco advertised a price promotion (see Table 5).

Figure 13: Availability of price promotion, by product



- In 2011, five percent of stores overall (13 percent of stores that sold snus) advertised a price promotion for snus (see Figure 13).

- On average, 4.7 percent (SD=13.4) of all chewing tobacco advertisements and displays featured a price promotion in 2011 (data not shown).

- The odds of a convenience store having at least one cigarette price promotion were significantly lower in 2011 compared to 2008 (OR=0.86, p<.05). This change was even more pronounced in supermarkets, small markets, pharmacies, and liquor stores (see Table 12).

Section 5: CIGARETTE PRICES

As in previous years, pack price before sales tax was computed for each of three premium brands and for two discount brands. A 20-cent litter mitigation fee was included in pack prices for all San Francisco stores. For comparisons over time, prices are adjusted for inflation and reported in 2011 US dollars.

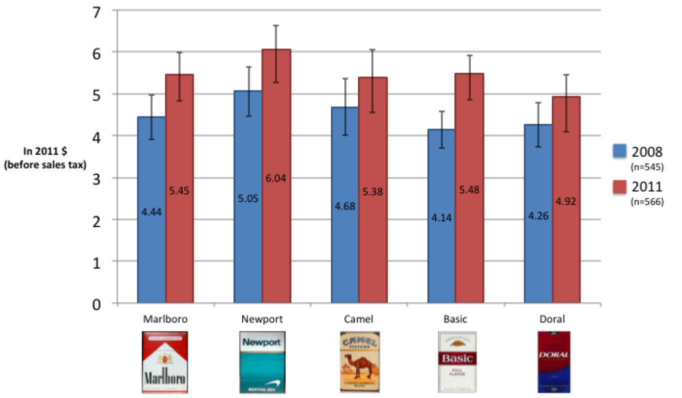
- The price (before sales tax) for each of the five cigarette brands increased by more than the $0.62 federal tax increase (see Figure 14). This pattern of “over-shifting” by the tobacco industry is consistent with observations in other states, such as New York and Massachusetts. (5,6)

- In 2011, the average lowest-per-pack price for Marlboro was $5.45 (SD=0.63), Camel was $5.38 (SD=0.83) and Newport was $6.04 (SD=0.78) (Figure 14). Between 2008 and 2011, the price increase was 29.0 percent for Marlboro, 20.4 percent for Camel, and 31.6 percent for Newport.

- Newport (menthol) remained the most expensive of the observed brands, which is consistent with its marketing position as a luxury brand.(7)

- Doral was not as prevalent in 2011, suggesting that a list of sentinel brands should be revised for future surveillance. The number of stores that sold Doral decreased from 205 in 2008 to only 30 in 2011.

Figure 14: Change in lowest-per-pack price, by brand



- In 2011, the difference between the average price with and without a discount was $0.52 for Marlboro, $0.76 for Camel, and $0.75 for Newport.

- Within stores with a multi-pack discount, the average discount was $0.68 (SD=0.44) for Marlboro, $0.55 (SD=0.42) for Camel and $0.86 (SD=0.53) for Newport.

Change in price as a function of store type

For all three premium brands, the annual change in pack price from 2008 to 2011 differed by store type:

- In convenience stores (which was the reference category), the estimated annual increase in pack price was $0.36 for Marlboro (see Table 13), $0.13 for Camel (see Table 14), and $0.29 for Newport (see Table 13). These amounts are equivalent to an 8.5 percent annual increase in the price for Marlboro, 3.4 percent for Camel, and 9.6 percent for Newport.

- Compared to convenience stores, the annual price increase for Marlboro was significantly higher in supermarkets ($0.58, p<0.01) and in small markets ($0.44, p<0.01), and significantly lower in pharmacies ($0.25, p<0.01) (see Table 13).

- Compared to convenience stores, the annual price increase for Camel was significantly higher in liquor stores ($0.20, p<.05), small markets ($0.30, p<0.01), and supermarkets ($0.55, p<0.001); it was significantly lower in pharmacies ($0.02, p<0.01) (see Table 14).

- Compared to convenience stores, the annual price increase for Newport was also significantly lower in pharmacies ($0.19, p<0.01), and did not differ for other store types (see Table 13).

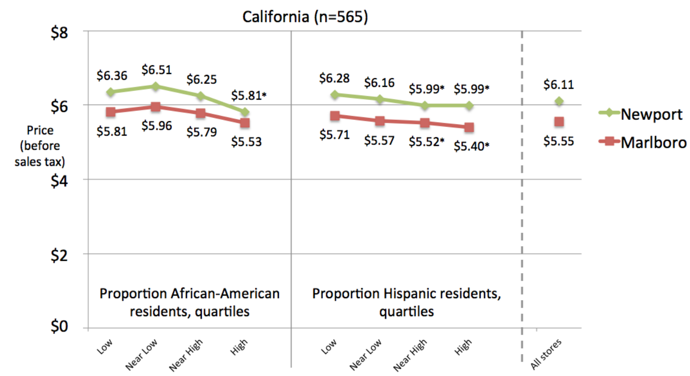
- Change in cigarette prices at pharmacies did not keep pace with increases at other types of stores. The annual increase in price was significantly lower in pharmacies compared to convenience stores (10 to 11 cents less, p<.01, see Tables 13 and 14).

Racial/ethnic and income disparities in cigarette prices

This section examines 2011 prices for the leading brands of menthol (Newport) and non-menthol (Marlboro) cigarettes in relation to neighborhood demography. For comparison purposes, neighborhood demographics are illustrated as quartiles of percent African-American residents, percent Hispanic residents, and median household income.

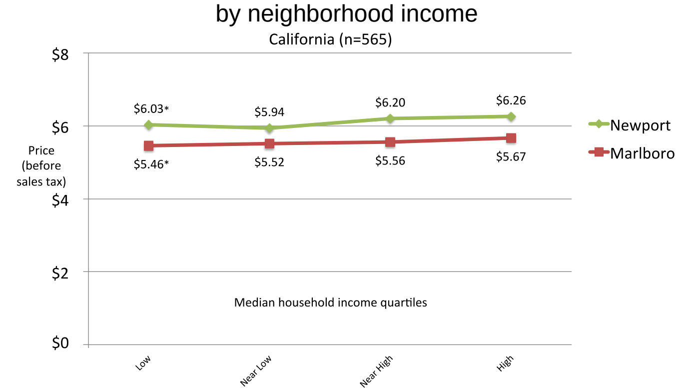
- Newport (menthol) cigarettes cost less in neighborhoods with a higher proportion of African-Americans; this pattern was unique to Newport and was not significant for Marlboro (see Figure 15).

Figure 15: Average price of Newport and Marlboro, by proportion of African-American and Hispanic residents



- Both Newport and Marlboro cost significantly less in neighborhoods with a higher proportion of Hispanic residents (see Figure 15) and in low-income neighborhoods, with the exception of Newport prices in the poorest areas (see Figure 16).

Figure 16: Average price of Newport and Marlboro, by neighborhood income



Change in price as a function of neighborhood demography

For each premium brand, the annual change in pack price from 2008 to 2011 was related to different neighborhood demographics:

- The amount of the price increase for Newport depended on the proportion of African-American residents. The more African-American residents in a neighborhood, the smaller the increase in Newport price between 2008 and 2011. For each 10 percentage point difference in the proportion of African-American residents, the annual change was $0.02 lower (p<.05) (See Table 13). For example, for a convenience store in a neighborhood with 7 percent African-American residents, the estimated annual price increase was $0.29. By comparison, in a neighborhood with 17 percent African-American residents the estimated annual price increase was $0.27 (two cents lower per year).

- The amount of the price increase for Marlboro depended on the proportion of Hispanic and African-American residents. Marlboro price increases were smaller in neighborhoods with more Hispanic residents and larger in neighborhoods with more African-American residents. Specifically, for each 10 percentage point difference in the percent of Hispanic residents, the annual change in price was $0.01 lower (p<.05). Conversely, for each 10 percentage point increase in African-American population, the annual change in price was $0.02 higher (p<.05). (See Table 13)

- The amount of the price increase for Camel depended on the proportion of youth (percent of residents under 18). Camel price increases were smaller in neighborhoods with a higher proportion of young residents. Specifically, for each 10 percentage point difference in the proportion of residents under age 18, the annual change in price was $0.04 lower (p<.05). (See Table 14)

Conclusion and Recommendations

Important changes since 2008 are (1) the increased availability and promotion of chewing tobacco and snus; and (2) dramatic reductions in marketing materials and price promotions for cigarettes.

A downward trend in smokeless tobacco marketing that was noted from 2005 to 2008 (8) has been reversed. One in three stores advertised chewing tobacco in 2008; one in two stores advertised the product in 2011. Both the number and proportion of marketing materials for chewing tobacco increased over this period, and the trend could not be explained by the introduction of snus. Between 2008 and 2011, the average proportion of marketing materials for chewing tobacco nearly doubled (from 10 percent to 18 percent). This trend was most noticeable in convenience stores.

These results largely reflect the changed landscape of the tobacco industry: What the 2008 CTAS report previously referred to as “cigarette companies” now manufacture multiple smokeless products, some of which share popular cigarette brand names (e.g., Marlboro and Camel). Greater visibility of marketing for smokeless products is also consistent with sales data: Between 2008 and 2011, US sales of smokeless tobacco (including snus) increased by 22 percent.(2) In California, sales of non-cigarette tobacco products nearly tripled from $77.1 million in 2001 to $210.9 million in 2011.(9)

A downward trend in the amount of cigarette marketing materials that was reported for 2005 and 2008 (8) continued in 2011, but not in convenience stores. This exception is noteworthy because of the strong ties between convenience stores and the tobacco industry,(10) because convenience stores are frequented by adolescents, (11,12) and because the greater their exposure to cigarette marketing in convenience stores, the more likely adolescents are to try smoking.(13)

The availability and visibility of price promotions for cigarettes decreased dramatically—from 79 percent of stores in 2008 to 48 percent in 2011. The proportion of cigarette advertisements and displays that featured a price discount dropped from about 1 in 2 to 1 in 7. In 2011, the proportion of advertisements and displays for chewing tobacco that featured a discount was 1 in 20. We could not assess change because this was not measured in 2008.

A significant decrease in the availability and visibility of cigarette price promotions is noteworthy, especially over a period in which tobacco industry expenditures on price promotions increased.(1) Price promotions are more prevalent in jurisdictions with strong tobacco control and higher tobacco tax rates.(14) Thus, a decline in the availability of price promotions may reflect California’s relatively low cigarette tax rate: 23 states have increased their cigarette tax since 2008 while California has not.(15)

Another possibility is that the industry has replaced traditional retail signs with packaging inserts/onserts and coupons to advertise price promotions. This underscores a need to understand how tobacco marketing in the retail environment is connected to marketing in other channels, particularly in social media and elsewhere on the Internet.

In addition, we cannot rule out the possibility that seasonal variation in the availability of price promotions could have contributed to the observed decline (2011 data were collected in winter and 2008 data were collected in summer).

A decline in marketing materials and promotions for cigarettes coupled with an increase for chewing tobacco gives the impression that the retail environment for tobacco marketing is a zero sum game (i.e. that marketing for smokeless products displaced marketing for cigarettes). However, the CTAS does not collect marketing information on many non-cigarette tobacco products (e.g., cigars, cigarillos, hookah, pipe tobacco, roll-your-own tobacco, and dissolvables as well as electronic nicotine delivery devices). Therefore, the surveillance results underestimate the quantity and visibility of retail tobacco marketing overall.

The protocol for CTAS should be modernized and revised to better inform new policy and regulatory efforts. Future statewide tobacco marketing surveillance should capture data and images electronically. Historical restrictions on the sampling frame should be altered to include tobacco-only stores in the sample, and perhaps to oversample pharmacies for improved power for store type comparisons. Recommended improvements for the protocol are to:

- assess availability and promotion of more non-cigarette tobacco products;
- expand marketing surveillance about flavored products to include non-cigarette tobacco products;
- revise the list of sentinel products for price observations to include fewer cigarettes (Marlboro, Camel, Newport, and Pall Mall) and more non-cigarette tobacco products (e.g., cigarillos, chewing tobacco and e-cigarettes);
- substitute single-pack for lowest-per-pack prices;
- monitor the least expensive pack price for comparability with other state and national surveillance efforts.

In addition, more frequent monitoring is recommended to keep pace with the shifting landscape of the tobacco retail environment.

The long-term goal of CTAS is to inform state and local tobacco control policy. State and local governments should consider multiple strategies to restrict tobacco industry marketing practices in stores, particularly given newly expanded authority to regulate the time, place, and manner of such marketing.(16) Recommended strategies (17) are to explore the feasibility of new laws to:

- control tobacco prices through non-tax mechanisms, such as establishing a minimum price, prohibiting promotional discounts and coupon redemption, and increasing the minimum unit size of non-cigarette tobacco products, such as little cigars and cigarillos;
- establish new or strengthen existing policies to reduce the preponderance of advertising on store windows and doors;
- restrict or eliminate the visible display of tobacco products;
- follow San Francisco’s lead in banning tobacco sales in pharmacies;
- ban the sale of menthol cigarettes, which is consistent with recommendations of the Tobacco Products Scientific Advisory Committee to the Food and Drug Administration to protect public health;(18)
- ban the sale of flavored non-cigarette tobacco products to make these products less attractive to youth;
- ensure that the marketing restrictions that pertain to tobacco products also pertain to electronic nicotine delivery devices, such as e-cigs, e-cigars, and e-hookah;
- increase the fee and strengthen the minimum requirements for state licensing of all tobacco retailers.

In addition, jurisdictions with local licensing could similarly strengthen fees and conditions, and jurisdictions without local licensing could adopt model ordinances. (19)

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Appendix A

List of Tables

Table 1: CTAS 2011 Availability of product by store type

		Product availability			
		Chew	Snus	Cigarillos	E-Cigs
Store Type	n	%	%	%	%
Supermarket	76	53.9%	32.9%	75.0%	3.9%
Small Market	148	39.9%	12.8%	65.5%	5.4%
Convenience	204	83.3%	61.3%	93.6%	15.7%
Gas Only	14	50.0%	21.4%	85.7%	7.1%
Pharmacy	48	64.6%	35.4%	83.3%	16.7%
Liquor Store	76	68.4%	44.7%	93.4%	17.1%
Total	566	63.6%	39.4%	82.7%	11.5%

Table 2: Advertisement placement, any interior tobacco advertisements below 3 ft.

	2008		2011	
	n	%	n	%
Supermarket	50	10.0%	76	28.9%
Small Market	134	9.7%	148	17.6%
Convenience	190	15.8%	204	47.1%
Gas Only	20	10.0%	14	21.4%
Pharmacy	49	22.4%	48	31.3%
Liquor store	102	12.7%	76	39.5%
Total	545	13.6%	566	33.9%

Table 3: Advertisement placement, any interior tobacco advertisements near candy

	2008		2011	
	n	%	n	%
Supermarket	50	0.0%	76	1.3%
Small Market	134	0.7%	148	8.8%
Convenience	190	0.0%	204	10.3%
Gas Only	20	0.0%	14	7.1%
Pharmacy	49	0.0%	48	4.2%
Liquor store	102	2.9%	76	18.4%
Total	545	0.7%	566	9.2%

Table 4: Total marketing materials (signs, displays, functional items) interior and exterior by product type and year

	2008			2011		
Cigarettes[1]	n	Mean	SD	n	Mean	SD
Supermarket	50	13.2	8.4	76	6.1	6.4
Small Market	134	14.0	10.3	148	9.2	11.3
Chain Convenience	190	20.6	11.1	204	18.6	9.7
Gas Only	20	15.4	11.6	14	9.7	10.3
Pharmacy	49	21.4	11.6	48	12.1	9.6
Liquor store	102	17.5	11.4	76	14.7	10.9
Total	545	17.6	11.2	566	13.2	10.9
Chew[2]						
Supermarket	50	2.4	4.1	76	2.8	6.5
Small Market	134	2.0	5.4	148	2.5	7.5
Chain Convenience	190	4.6	8.2	204	11.9	15.2
Gas Only	20	3.5	7.8	14	1.5	2.7
Pharmacy	49	2.2	4.2	48	2.5	4.9
Liquor store	102	2.9	8.6	76	2.8	5.2
Total	545	3.2	7.1	566	5.9	11.3
Snus[2]						
Supermarket	-	-	-	76	0.1	0.5
Small Market	-	-	-	148	0.1	0.5
Chain Convenience	-	-	-	204	1.4	1.6
Gas Only	-	-	-	14	0.4	0.9
Pharmacy	-	-	-	48	0.2	0.4
Liquor store	-	-	-	76	0.4	0.9
Total	-	-	-	566	0.6	1.2
All Tobacco*						
Supermarket	50	15.6	10.5	76	9.0	10.8
Small Market	134	16.0	12.8	148	11.9	16.1
Chain Convenience	190	25.2	15.9	204	31.8	21.5
Gas Only	20	18.9	14.4	14	11.6	13.2
Pharmacy	49	23.7	12.6	48	14.8	10.9
Liquor store	102	20.4	16.3	76	17.9	14.2
Total	545	20.8	15.0	566	19.7	19.4

[1] Advertisements, displays, functional items and shelving units
[2] Advertisements, displays and functional items
*All Tobacco = cigarettes, chew, & snus

Table 5: CTAS 2011 Availability of a price promotion for chewing tobacco & snus by store type

	Chew n = 360	Snus n = 223
Supermarket	4.9%	0.00%
Small Market	11.9%	15.8%
Convenience	22.4%	15.2%
Gas Only	28.6%	66.7%
Pharmacy	-	0.00%
Liquor store	11.5%	14.7%
Total	15.3%	13.0%

Note: Denominator is stores that sell product. Not available for 2008 as product availability was not measured.

Table 6: CTAS 2011 Quantity of tobacco marketing materials by store type and placement of advertisements by store type

Total marketing materials for each product type

		Cigarettes		Chew		Snus		Smokeless (chew & snus)		All Tobacco	
Store Type	n	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd
Supermarket	76	6.1	6.4	2.8	6.5	0.1	0.5	2.9	6.6	9.0	10.8
Small Market	148	9.2	11.3	2.5	7.5	0.1	0.5	2.7	7.5	11.9	16.1
Convenience	204	18.6	9.7	11.9	15.2	1.4	1.6	13.3	15.8	31.8	21.5
Gas Only	14	9.7	10.3	1.5	2.7	0.4	0.9	1.9	3.4	11.6	13.2
Pharmacy	48	12.1	9.6	2.5	4.9	0.2	0.4	2.7	4.7	14.8	10.9
Liquor Store	76	14.7	10.9	2.8	5.2	0.4	0.9	3.2	5.4	17.9	14.2
Total	566	13.2	10.9	5.9	11.3	0.6	1.2	6.6	11.9	19.7	19.4

Table 7: CTAS 2011 Quantity of tobacco marketing materials by brand and product

	Shelving Units # per store		Displays # per store		Interior signs # per store		Exterior signs # per store		Functional items (interior + exterior)* # per store		Total marketing materials # per store	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Marlboro	0.9	0.9	0.3	0.8	3.5	3.5	0.3	0.9	0.0	0.1	4.9	4.3
Camel	0.1	0.3	0.1	0.4	1.3	2.1	0.2	0.7	0.0	0.2	1.6	2.5
Newport	0.0	0.2	0.1	0.4	1.0	1.8	0.2	0.6	0.0	0.1	1.3	2.3
Other cigarette brands	0.3	0.6	0.4	1.0	3.9	4.3	0.8	1.8	0.0	0.1	5.4	5.5
All cigarettes	1.2	1.2	0.8	1.6	9.6	8.7	1.5	2.9	0.0	0.2	13.2	10.9
Chew	N/A		0.6	1.3	5.3	10.7	0.1	0.6	0.0	0.1	5.9	11.3
Snus	N/A		0.2	0.5	0.4	0.9	0.0	0.1	0.0	0.0	0.6	1.2
All tobacco	N/A		1.6	2.3	15.2	16.9	1.7	3.0	0.0	0.2	19.7	19.4

*There were a total of 23 functional items (interior & exterior combined) observed across all 566 study stores.

Table 8: CTAS 2011 Quantity of cigarette advertisements and share of voice* for menthol by store type

		Interior & exterior advertisements												Menthol share of voice		
		Marlboro		Camel		Newport		Other cigarettes		Total		Total menthol cigarettes				
Store Type	n	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	Mean	SD	n	mean	SD
Supermarket	76	2.7	4.0	0.2	0.6	0.1	0.4	1.2	2.6	4.2	6.0	0.6	1.5	55	11.7%	18.3%
Small Market	148	2.0	3.0	1.0	2.5	0.9	1.9	4.2	6.0	8.0	10.3	1.9	3.6	104	20.9%	24.5%
Convenience	204	5.3	3.3	2.5	2.6	1.7	2.4	6.5	4.5	15.9	9.0	4.3	3.5	196	25.7%	17.3%
Gas Only	14	2.8	3.0	0.9	1.6	0.9	1.8	4.2	5.0	8.8	9.3	2.8	4.0	10	21.6%	23.4%
Pharmacy	48	5.4	4.5	1.1	1.6	0.6	1.2	2.6	3.9	9.8	8.6	2.5	3.8	45	25.1%	25.0%
Liquor Store	76	3.4	3.3	1.4	2.1	1.7	2.5	5.8	5.4	12.3	10.4	3.7	4.8	70	25.0%	23.6%
Total	566	3.8	3.7	1.5	2.4	1.2	2.1	4.7	5.2	11.1	10.1	2.9	3.8	480	22.8%	21.4%

*Menthol share of voice is the percentage of all advertisements that include a menthol brand in stores with any cigarette advertisements

Table 9: Total cigarette marketing materials, correlates of change (2008-2011)

For Store level intercept	Coefficient	*p*-value
Intercept	17.61	<0.001
For Time (annual change) slope		
Annual Change	-0.14	0.645
Under 18 yrs, per 10%	0.16	0.551
African-American residents, per 10%	0.21	0.227
Hispanic residents, per 10%	-0.24	0.002
Median household income, per $10K	-0.17	0.030
Population density, 100 residents per sq. mile	0.00	0.009
Store type (convenience is reference category)		
Supermarket	-3.69	<0.001
Small Market	-2.31	<0.001
Gas only	-1.22	0.190
Pharmacy	-1.93	<0.001
Liquor store	-0.38	0.378
All neighborhood numeric predictors grand mean centered.		

Table 10: Percent of advertisements for chewing tobacco: correlates of change (2008-2011)

For Store level intercept	Coefficient	*p*-value
Intercept	10.0	<0.001
For Time (annual change) slope		
Annual Change	5.3	<0.001
Residents under 18 years, per 10%	0.9	0.098
African-American residents, per 10%	-1.2	0.003
Hispanic residents, per 10%	-1.0	<0.001
Median household income, per $10K	-0.7	<0.001
Population density, 100 residents per sq. mile	0.0	<0.001
Store type (convenience is reference category)		
Supermarket	-4.6	<0.001
Small Market	-3.5	<0.001
Gas only	-4.1	0.034
Pharmacy	-5.5	<0.001
Liquor store	-4.1	<0.001
All neighborhood numeric predictors grand mean centered.		

Table 11: CTAS 2011 Availability and type of promotions for product and brand by store type

		Type of promo			**Cigarette brand (at least one promo of any type)**				**Tobacco product (at least one promo of any type)**			
		Special	Multi-pack discount	Both	Marlboro	Camel	Newport	Other cigarette	Any Cig.	Chew	Snus	Any tobacco
Store Type	n	%	%	%	%	%	%	%	%	%	%	%
Supermarket	76	13.2%	3.9%	1.3%	11.8%	5.3%	0.0%	10.5%	17.1%	2.6%	0.0%	18.4%
Small Market	148	28.4%	0.0%	0.7%	8.1%	10.1%	7.4%	20.3%	29.1%	4.7%	2.0%	29.1%
Convenience	204	66.2%	23.0%	9.8%	37.3%	43.6%	22.1%	54.9%	74.5%	18.6%	9.8%	76.0%
Gas Only	14	50.0%	0.0%	7.1%	21.4%	21.4%	28.6%	35.7%	50.0%	14.3%	14.3%	50.0%
Pharmacy	48	45.8%	12.5%	4.2%	29.2%	25.0%	8.3%	18.8%	50.0%	0.0%	0.0%	50.0%
Liquor Store	76	43.4%	3.9%	2.6%	17.1%	25.0%	14.5%	36.8%	46.1%	7.9%	6.6%	46.1%
Total	566	44.0%	10.4%	4.8%	22.4%	25.1%	13.3%	33.9%	48.4%	9.7%	5.3%	49.1%

*Promotions noted for interior and exterior advertisements and interior displays

Table 12: Availability of cigarette promotion, correlates of change (2008-2011)

For Store level intercept	Odds Ratio	p-value
Intercept	3.69	<0.001
For Time (annual change) slope		
Annual Change	0.86	0.019
Under 18 yrs, per 10%	1.05	0.351
African-American residents, per 10%	1.04	0.257
Hispanic residents, per 10%	0.98	0.172
Median household income, per $10K	0.98	0.212
Population density, 100 residents per sq. mile	1.00	0.011
Store type (convenience is reference category)		
Supermarket	0.42	<0.001
Small Market	0.59	<0.001
Gas only	0.85	0.376
Pharmacy	0.70	0.002
Liquor store	0.78	0.006
All neighborhood numeric predictors grand mean centered		

Table 13: Lowest per pack price of Newport & Marlboro, correlates of change (2008-2011)

	Newport		Marlboro	
Store level intercept	Coefficient	p-value	Coefficient	p-value
Intercept	5.05	<0.001	4.23	<0.001
Time (annual change) slope				
Annual Change	0.29	<0.001	0.36	<0.001
Under 18 yrs, per 10%	-0.01	0.792	-0.03	0.108
African-American residents, per 10%	-0.02	0.034	0.02	0.027
Hispanic residents, per 10%	-0.01	0.053	-0.01	0.031
Median household income, per $10K	0.00	0.808	0.01	0.174
Population density, 100 residents per sq. mile	0.00	0.163	0.00	0.032
Store type (convenience is reference category)				
Supermarket	0.30	<0.001	0.22	<0.001
Small Market	0.04	0.129	0.08	<0.001
Gas only	0.09	0.163	0.06	0.254
Pharmacy	-0.10	0.009	-0.11	<0.001
Liquor store	-0.01	0.720	0.02	0.430

All neighborhood numeric predictors grand mean centered
2008 prices adjusted for inflation to 2011 dollars

Table 14: Model of change over time in price of Camel, and correlates of change

Fixed Effect	Coefficient	p-value
Store level intercept		
Intercept	4.68	<0.001
Time (annual change) slope		
Annual Change	0.13	<0.001
Under 18 yrs, per 10%	-0.04	0.025
African-American, per 10%	0.02	0.059
Hispanic, per 10%	-0.01	0.101
Median household income, per $10K	0.00	0.354
Population density, 100 residents per sq. mile	0.00	0.016
Store type (convenience is reference category)		
Supermarket	0.42	<0.001
Small Market	0.17	<0.001
Gas only	0.08	0.165
Pharmacy	-0.11	0.002
Liquor store	0.07	0.024

Table 15. Reliability analysis summary of select variables

Variables	Reliability statistic
Product Availability	
Snus	k = 1.00
Chew	k = 1.00
Cigars, cigarillos, little cigars	k = 1.00
E-cigs	k = 0.79
Promotion/Advertising	
Total number of signs (interior and exterior)	ICC = 0.99
Total number of interior signs	ICC = 0.98
Total number of exterior signs	ICC = 0.99
Total marketing materials (count)	ICC = 0.99
Presence of any cigarette promotion adverisement (interior and exterior)	k = 0.69
Total number interior menthol signs	ICC = 0.70
Ad placement near candy	k = 1.00
Ad placement below 3-feet	k = 0.78
Counter-marketing	
Presence of 1-800-5ASK4ID	k = 1.00
Presence of We Card	k = 0.94
Price	
Advertised price - Newport (single pack)	ICC = 0.95
Advertised price - Marlboro (single pack)	ICC = 0.96
Advertised price - Camel (single pack)	ICC = 0.93
Advertised price - Basic (single pack)	ICC = 0.90
Price recorded (single pack) was discounted (sale or special)	k = 0.82
Store information	
Store type	100%
Number of cash registers	ICC = 0.99

k = Cohen's Kappa, computed for categorical data
ICC = intraclass correlation coefficient, computed for numeric data
Reliability assessments based on repeat visits by two different coders to 40 of 565 stores (7%)
Time span between first and second visits from 1 to 30 days (mean = 11.8, SD = 6.6)

List of Figures

Figure 1: Location of longitudinal sample, CTAS 2008-2011

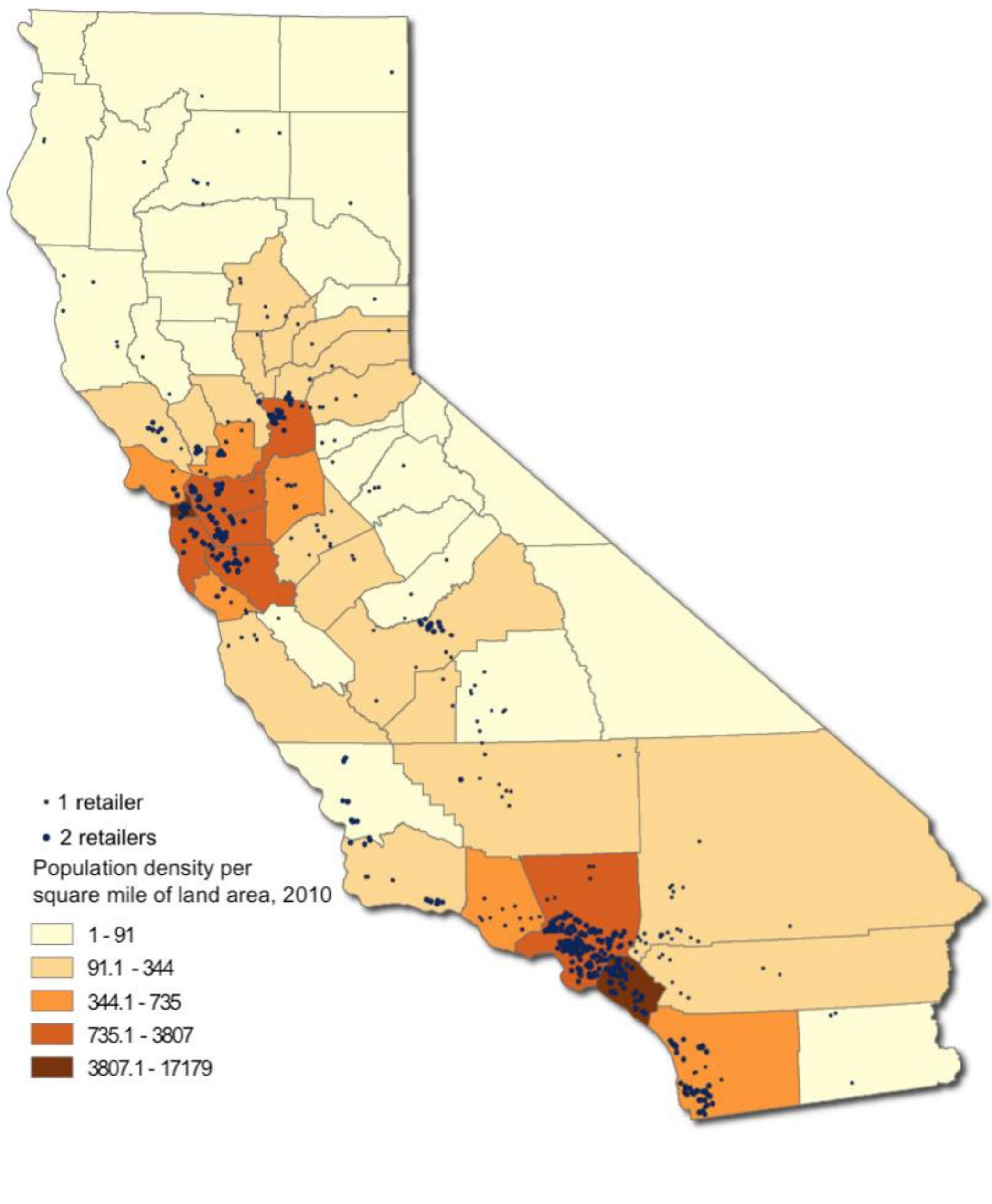
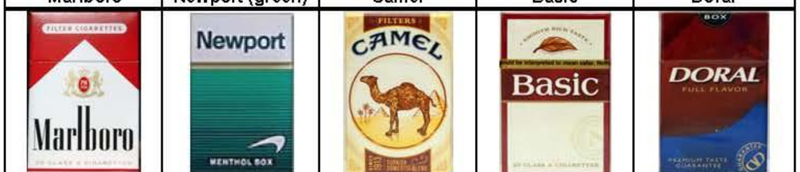


Figure 2: Prices: Single-pack and lowest-per-pack

Store ID: ____________

	None	CIGARETTES: MARLBORO	NEWPORT	CAMEL	OTHER	SMOKELESS: CHEW	SNUS
27) Any interior ads at or below 3 ft?	❑0						
28) Any displays at or below 3 ft?	❑0						
29) Any functional items at or below 3 ft?	❑0						

Price for Cigarettes (regular hard pack) – lowest pack price for single pack and multi-pack purchases



	Marlboro	Newport (green)	Camel	Basic	Doral
30) Brand not sold	❑0	❑0	❑0	❑0	❑0
Price to purchase a single pack					
31) Single pack price (enter ".09" if store sells brand but price is unavailable)	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _
32) Sale or special price	❑0 No ❑1 Yes	❑0 No ❑1 Yes	❑0 No ❑1 Yes	❑0 No ❑1 Yes	❑0 No ❑1 Yes
33) Sales tax included	❑0 No ❑1 Yes	❑0 No ❑1 Yes	❑0 No ❑1 Yes	❑0 No ❑1 Yes	❑0 No ❑1 Yes
Lowest pack price from a multi-pack discount (if any)					
34) Multi-pack discount	❑0 None ❑1 Buy # get # free ❑2 Other	❑0 None ❑1 Buy # get # free ❑2 Other	❑0 None ❑1 Buy # get # free ❑2 Other		
35) Multi-pack purchase price (enter ".09" if store sells brand but price is unavailable)	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _		
36) Number of packs	# ____ packs	# ____ packs	# ____ packs		
37) Sales tax included	❑0 No ❑1 Yes	❑0 No ❑1 Yes	❑0 No ❑1 Yes		

D. STORE EXTERIOR

Are these items present?

38) We Card	❑0 No	❑1 Yes
39) 1-800-5ASK4ID	❑0 No	❑1 Yes
40) Tobacco ads at or below 3 ft	❑0 No	❑1 Yes
41) Tobacco functional items at or below 3 ft	❑0 No	❑1 Yes

Figure 3: Product availability in 2011 (n=566)

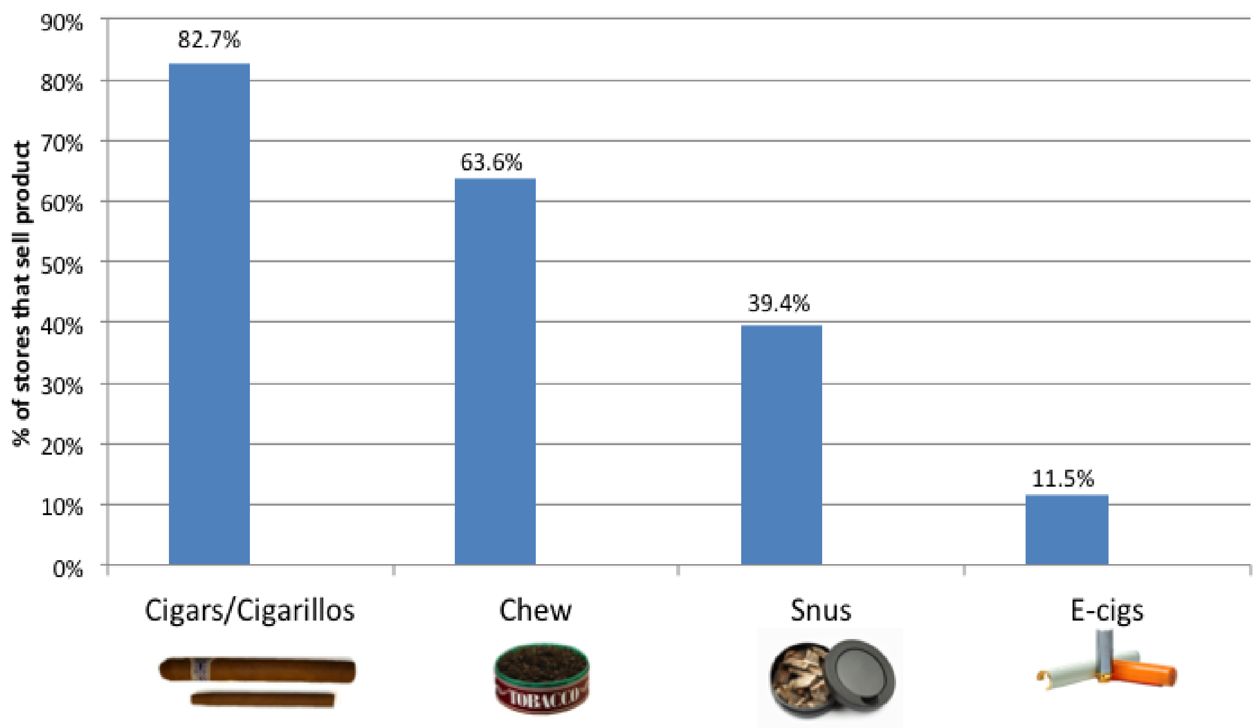


Figure 4: Smokeless availability by store type, 2011

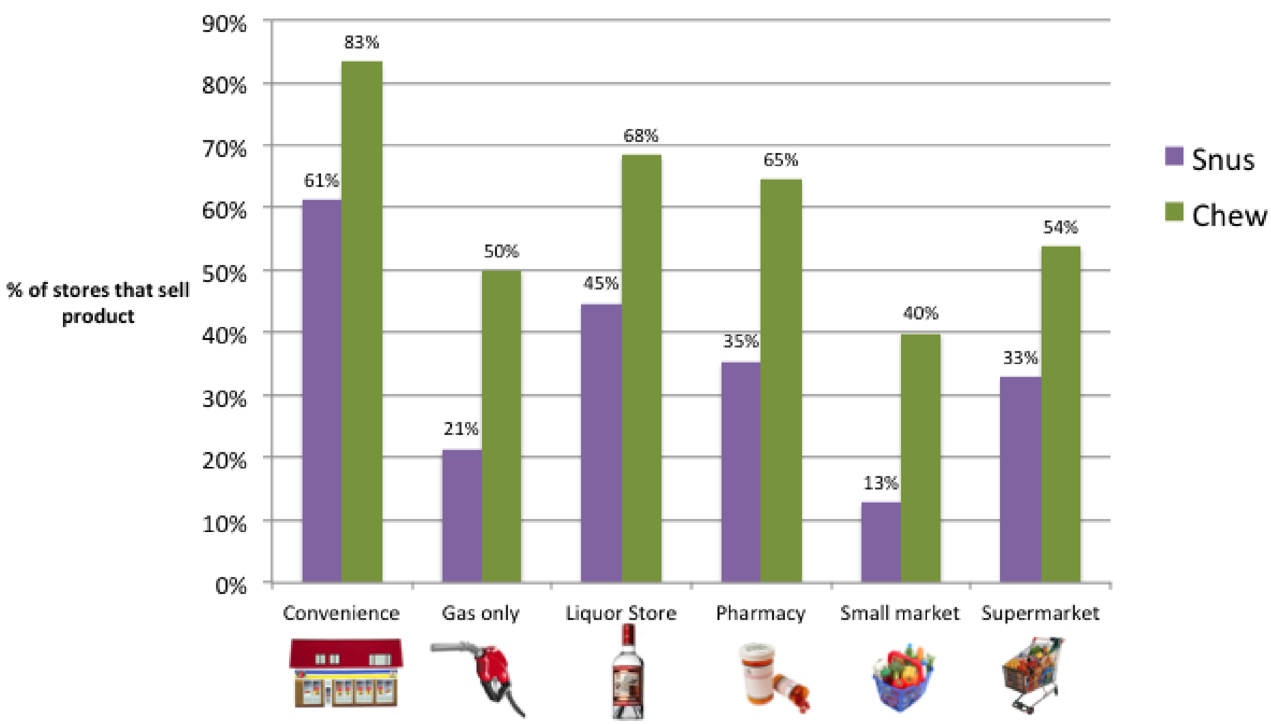


Figure 5: Longitudinal Sample (n=698)

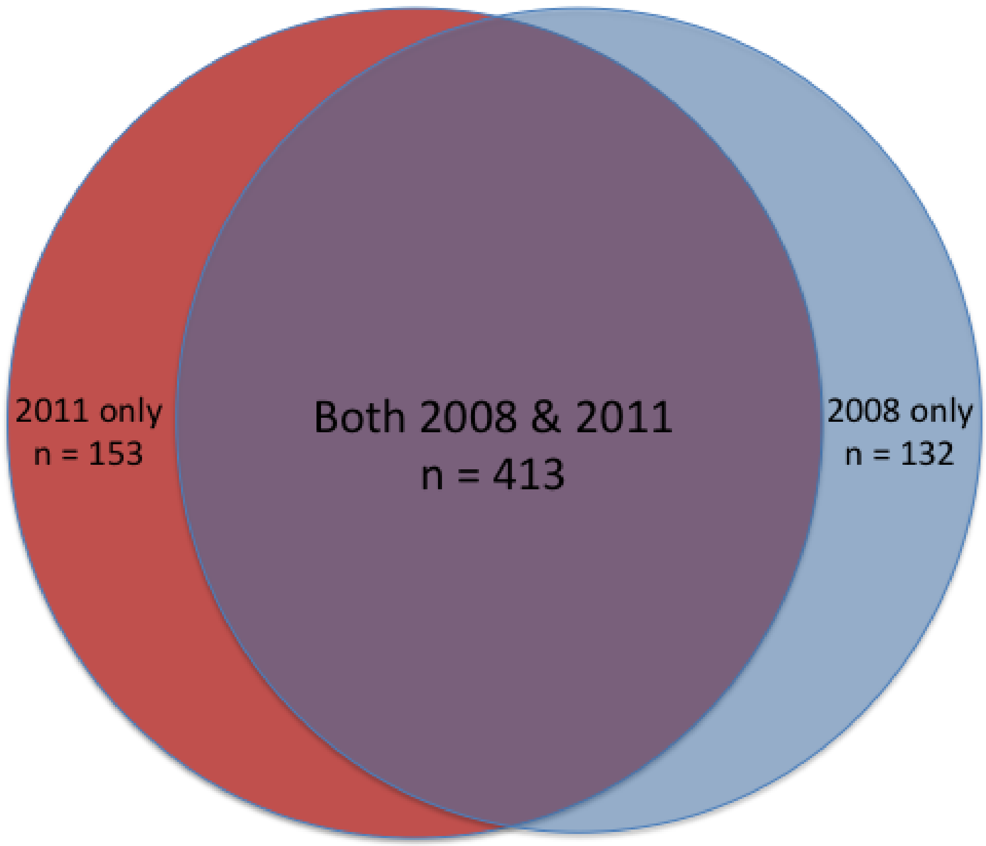


Figure 6: Sample composition in 2008 and 2011

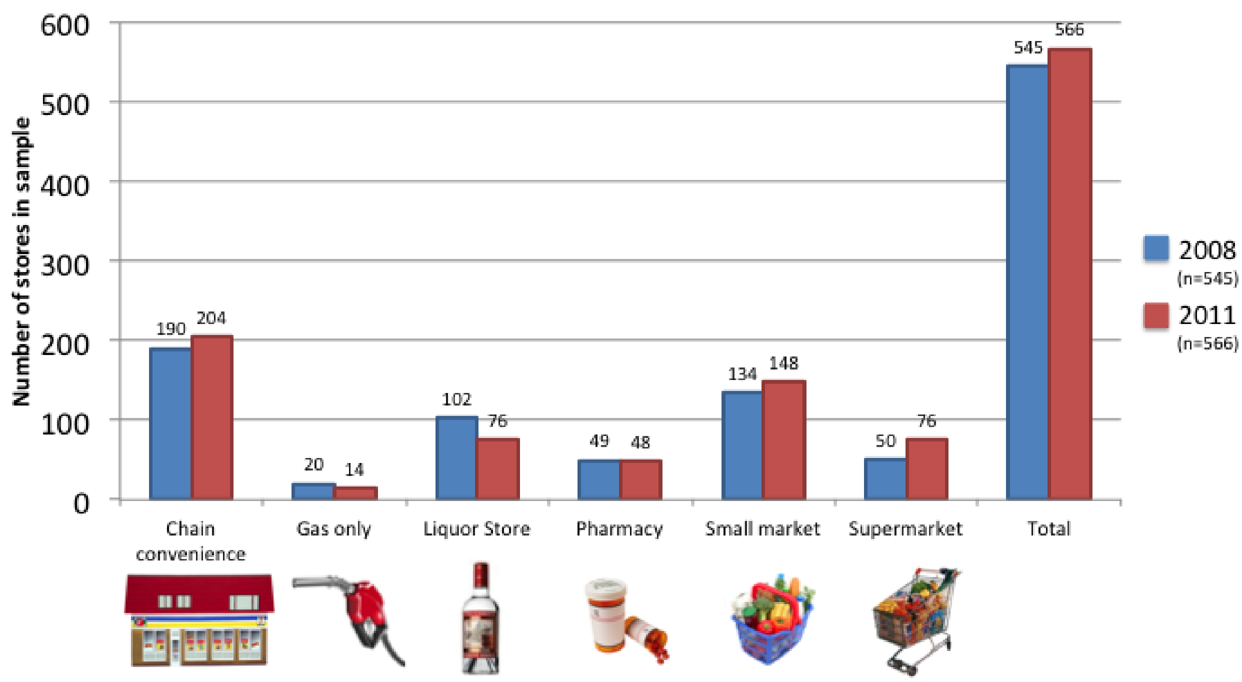


Figure 7: Placement, any tobacco advertisement below three feet or near candy

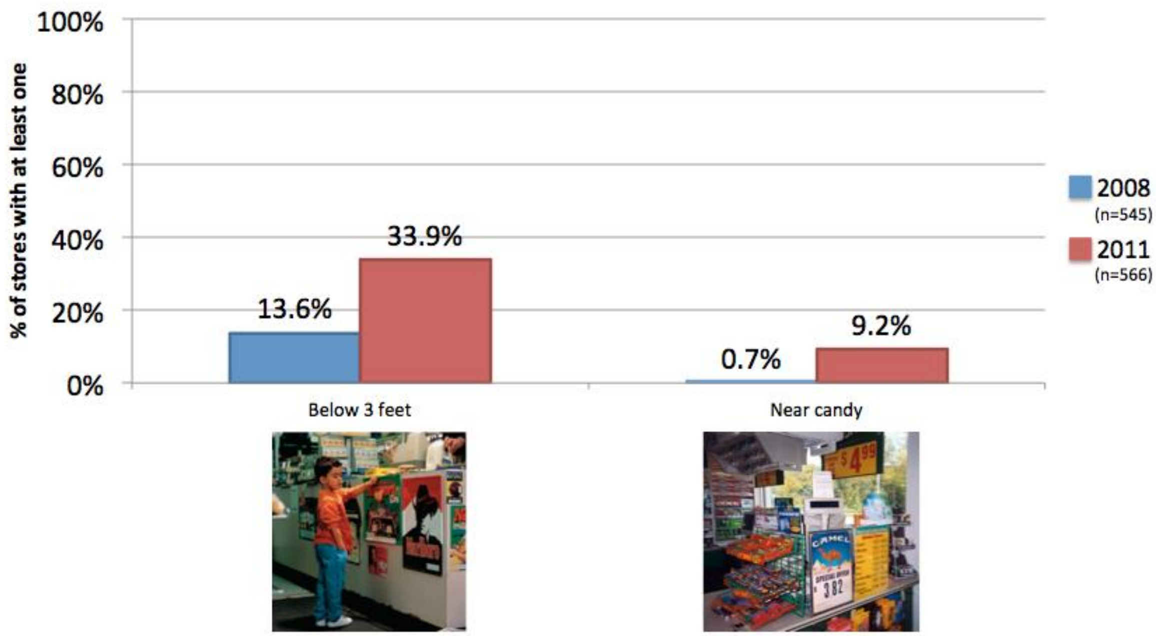


Figure 8: At least one exterior tobacco advertisement

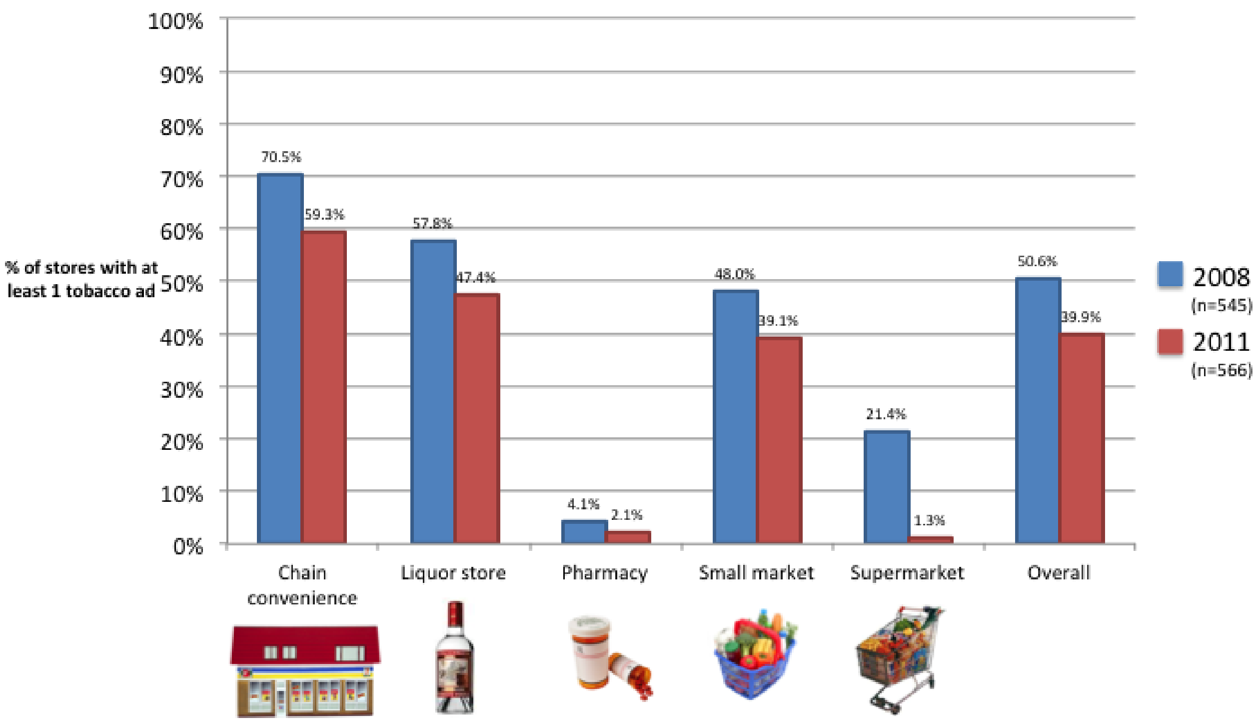


Figure 9: Total tobacco marketing materials, by store type

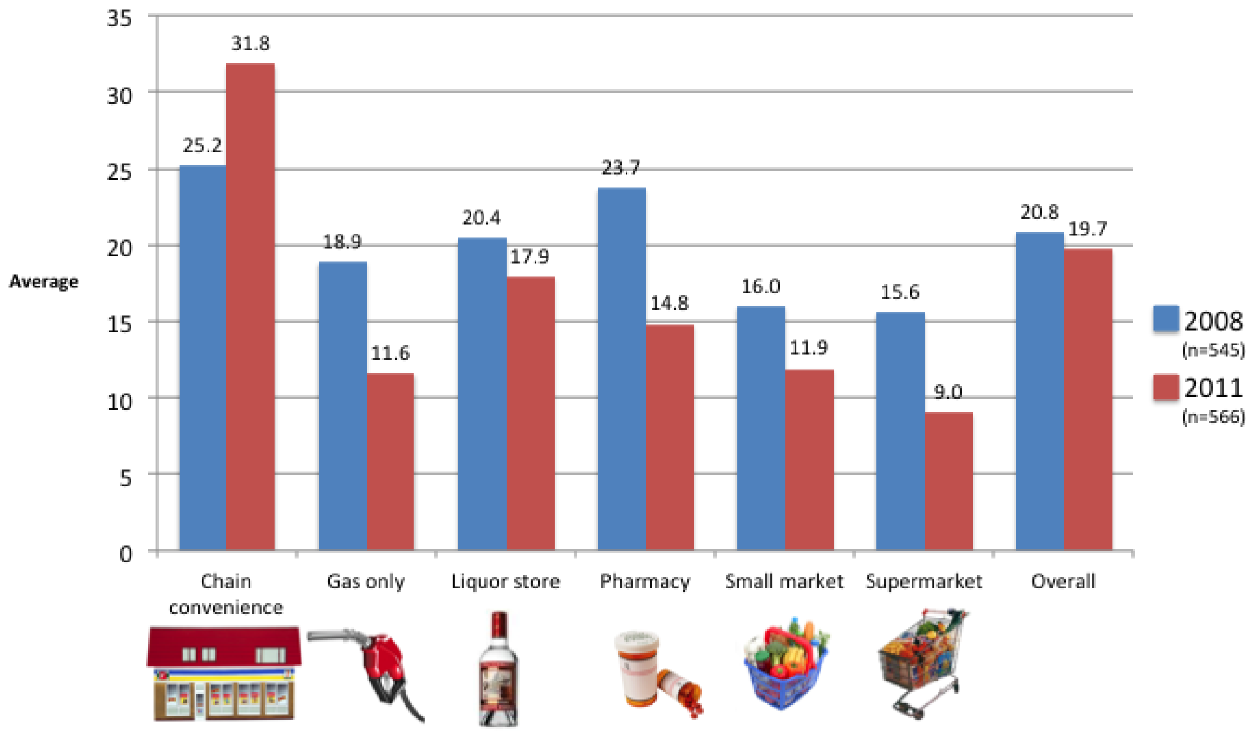


Figure 10: Advertisements per store for menthol, all cigarettes, by proportion of African-American and Hispanic residents, 2011

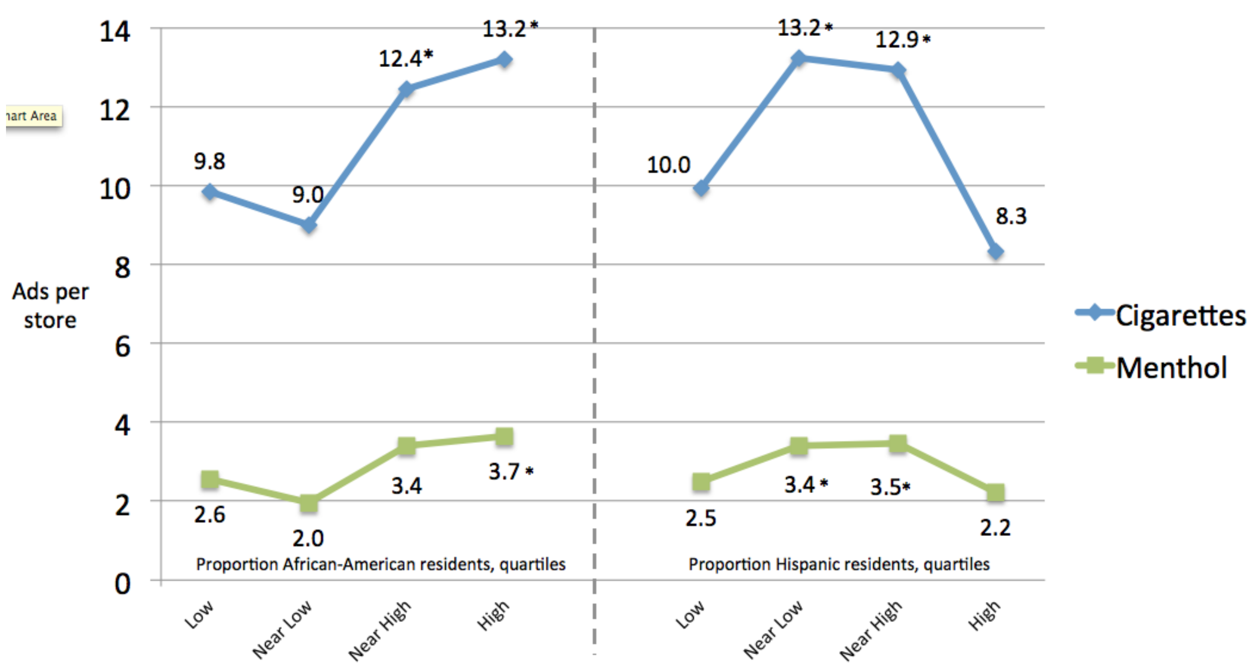


Figure 11: Advertisements per store for menthol and all cigarettes, by neighborhood income, 2011

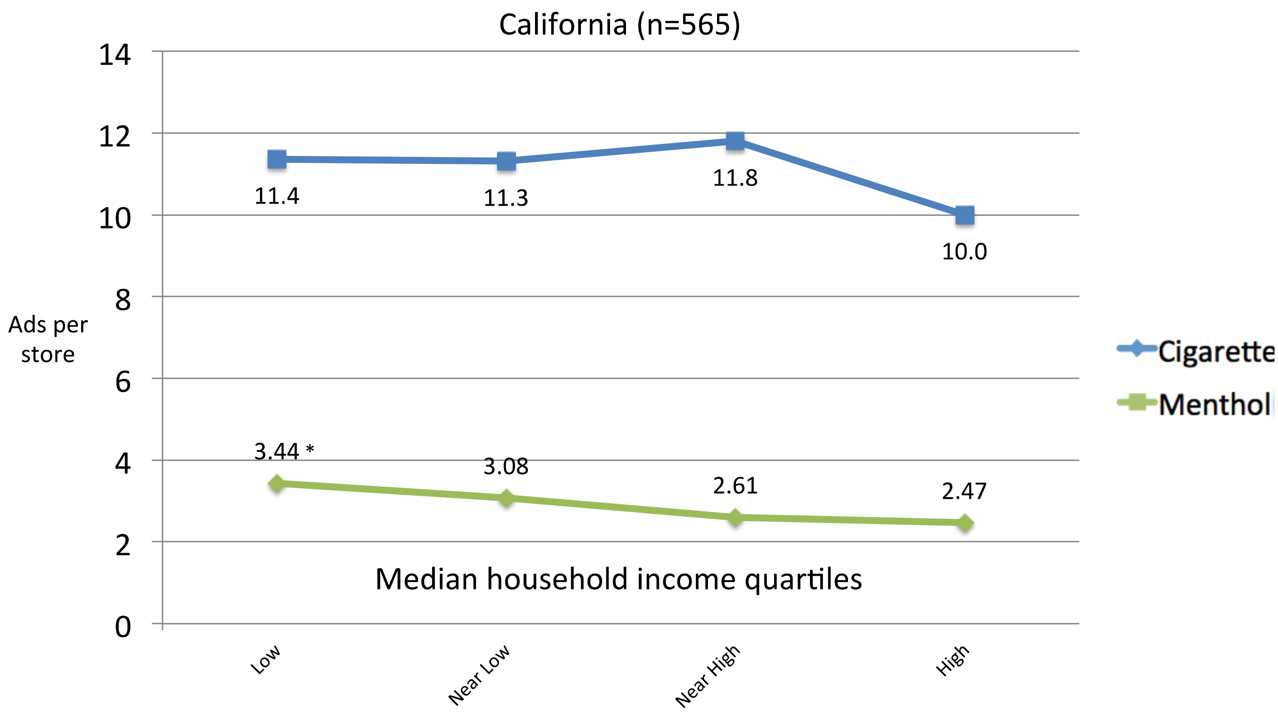


Figure 12: Change in proportion of marketing materials for chewing tobacco

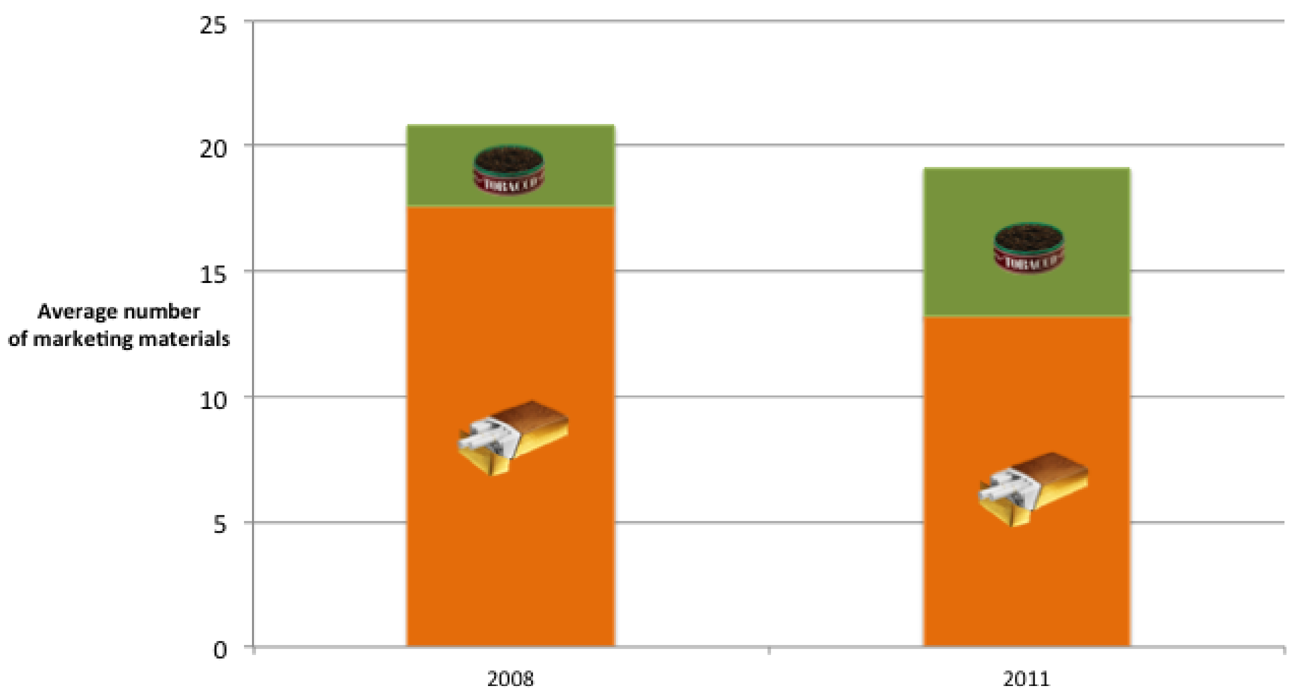


Figure 13: Availability of price promotion, by product

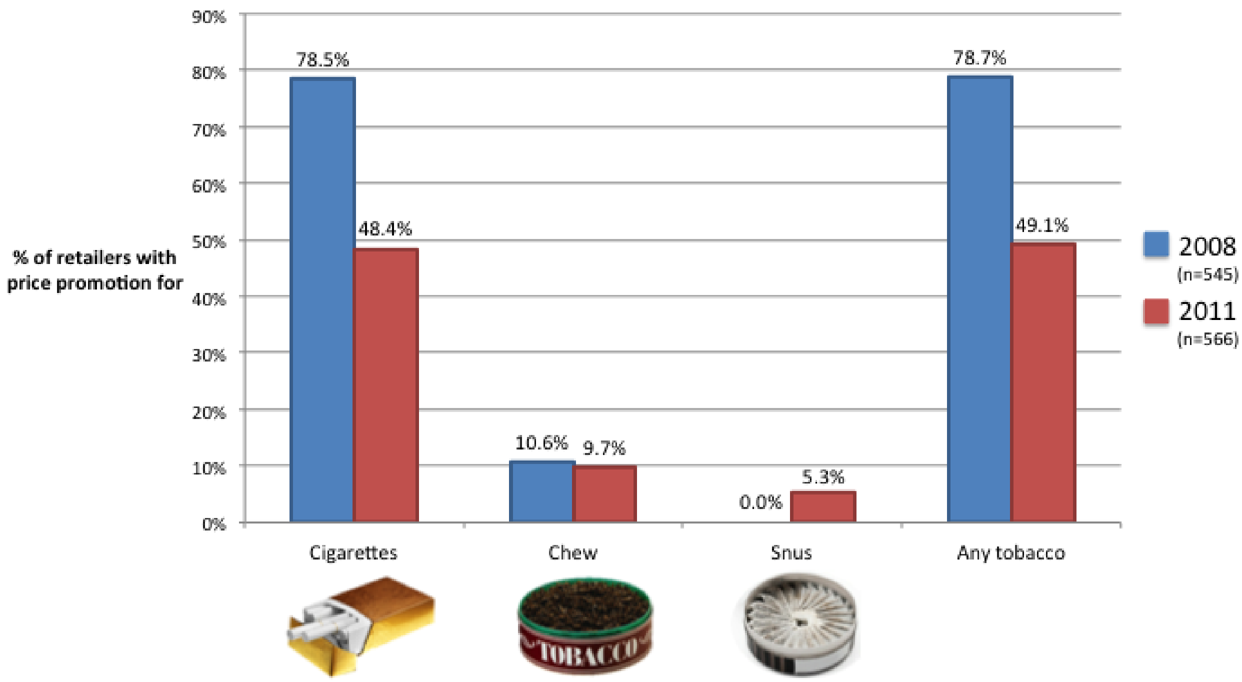


Figure 14: Change in lowest-per-pack price, by brand

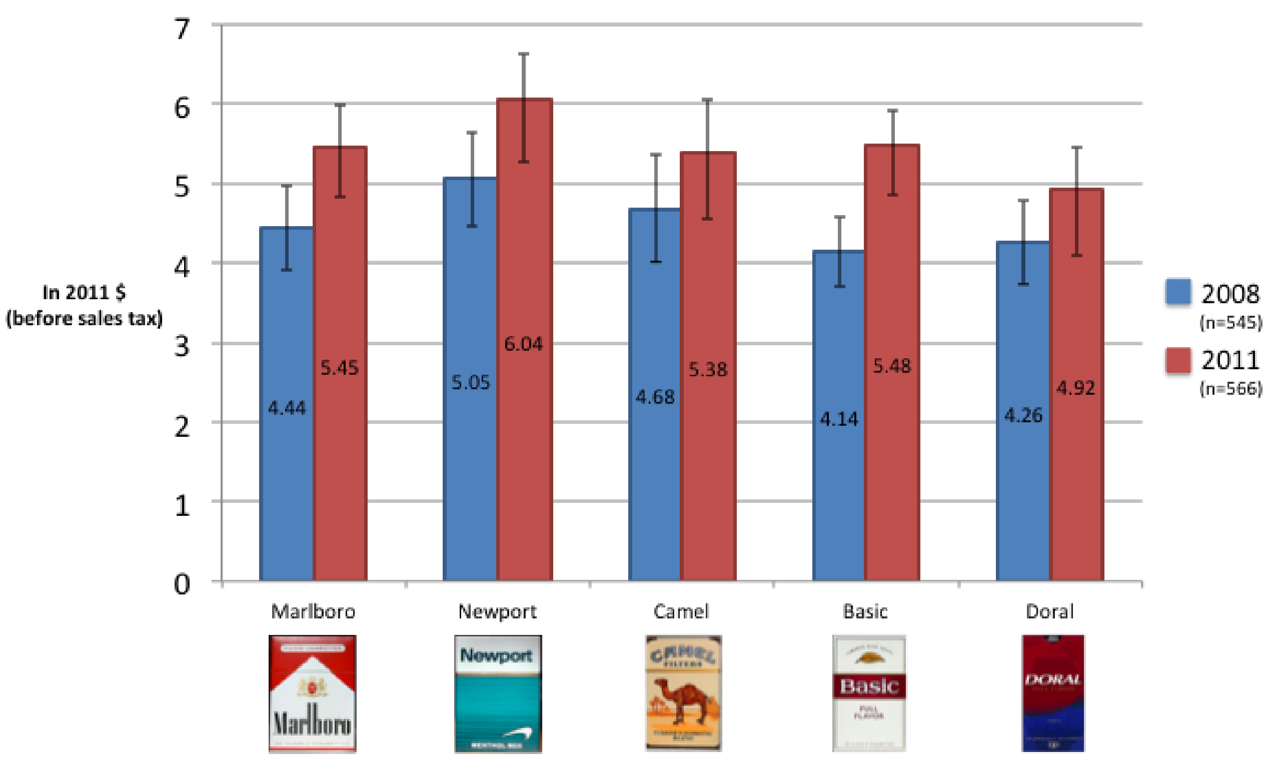


Figure 15: Average price of Newport and Marlboro, by proportion of African-American and Hispanic residents

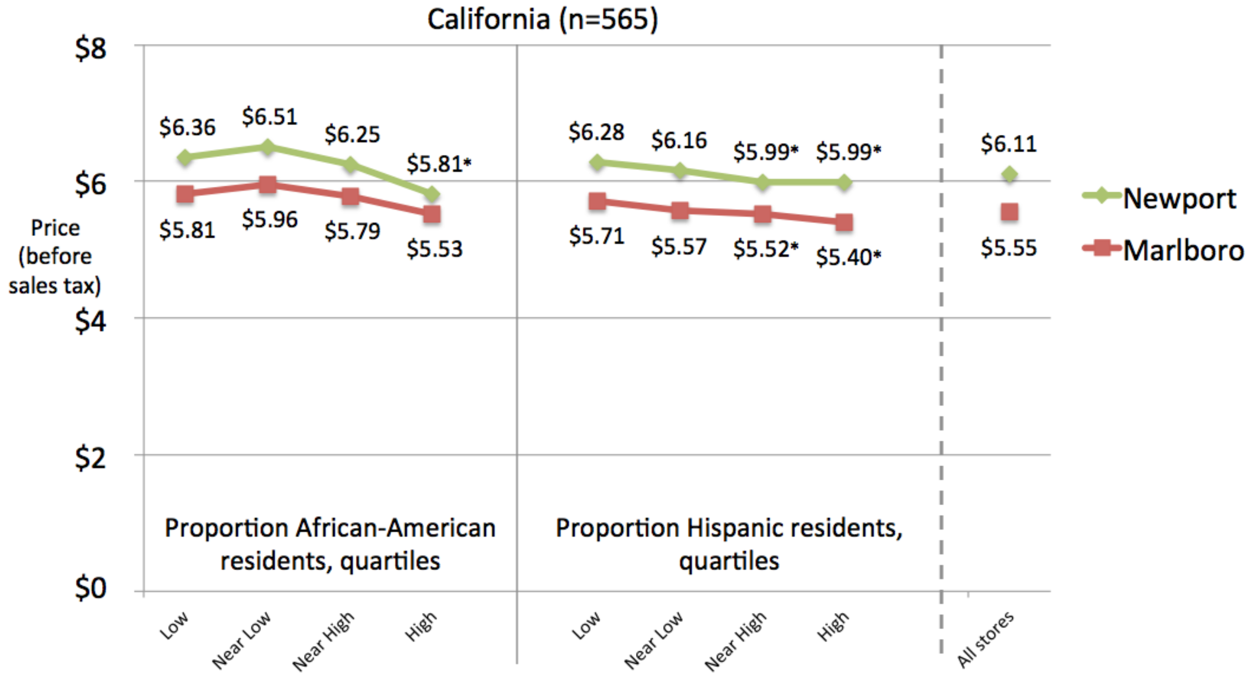
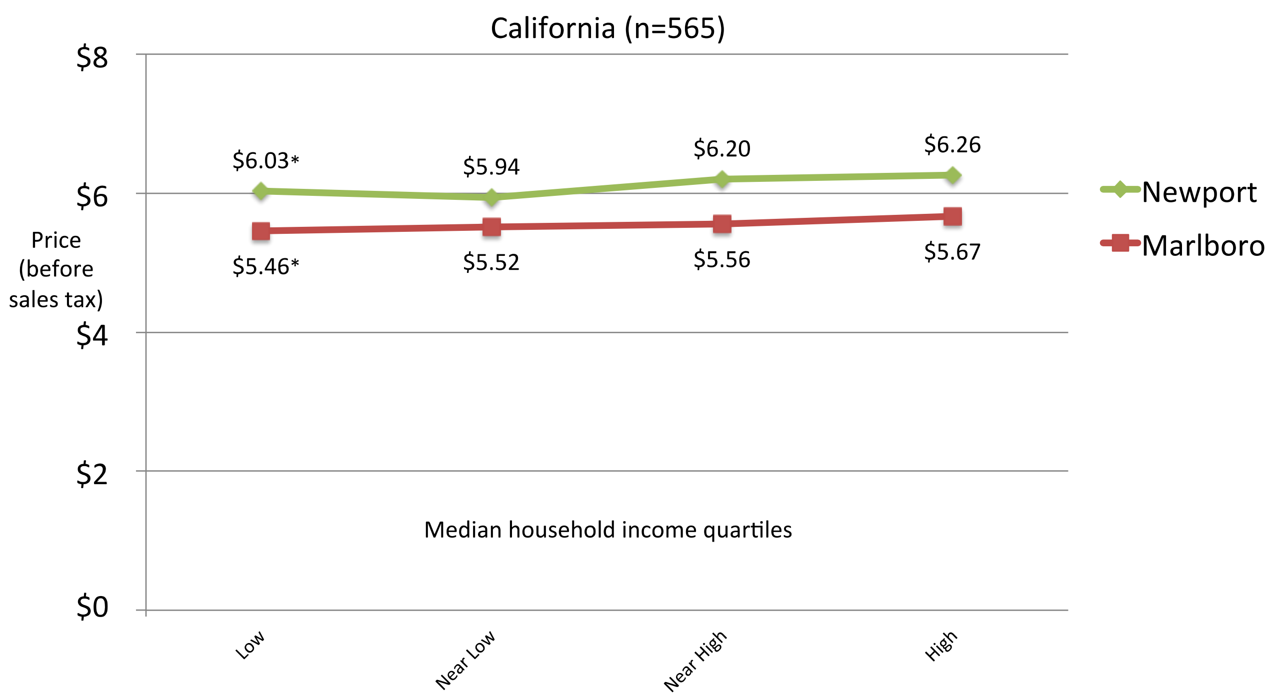


Figure 16: Average price of Newport and Marlboro, by neighborhood income



Appendix B

CTAS Store Observation Form, 2011

California Tobacco Advertising Study
Store Observation Form
2011

Store Label

Corrections

Name: ______________________________

Address: ______________________________

Comments: ______________________________

____

____

____

____

____

____

____

____

____

____

Store ID: ___________

A. STORE INFORMATION

1) Store ID: ______________________

2) Coder ID: ______________________

3) Date of visit: ____________________

4) Confirm store location using GPS device

Obtain lat/long ☐0 No ☐1 Yes

5) Store Type:
- ☐1 Supermarket
- ☐2 Small Market
- ☐3 Chain Convenience (no gas)
- ☐4 Chain Convenience (with gas)
- ☐5 Gas Only
- ☐6 Drug Store
- ☐7 Liquor Store
- ☐8 Other (specify): ____________

6) Number of cash registers: ___________

B. STORE INTERIOR - PRODUCT

7) Product availability:

	CHEW	SNUS	CIGARILLOS, LITTLE CIGARS, OR CIGARS	E-CIGARETTES
a) Product not sold	☐0	☐0	☐0	☐0

b) If e-cigarettes are sold, are they available by self-service display? ☐0 No ☐1 Yes

8) Product visibility – Can you see any:

a) Cigarette packs or cartons visible to customers? ☐0 No ☐1 Yes

b) Snus packs visible to customers? ☐0 No ☐1 Yes

C. STORE INTERIOR - ADVERTISING

Interior Age of Sale Signs - Are these items present?

9) We Card ☐0 No ☐1 Yes

10) 1-800-5ASK4ID ☐0 No ☐1 Yes

Interior Functional Items

		CIGARETTES				SMOKELESS	
	None	MARLBORO	NEWPORT	CAMEL	OTHER	CHEW	SNUS
11) Number by brand - **near** counter	☐0						
12) Number by brand - **away** from counter	☐0						

Store ID: ___________

Interior Tobacco Ads

13) Check box if there are **no** interior tobacco ads: ❑0 (skip to 19)

For each interior ad, record:

	14) Product	15) Cigarette flavor	16) Promo type	17) Near counter
Ad 1		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 2		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 3		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 4		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 5		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 6		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 7		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 8		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 9		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 10		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 11		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 12		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 13		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 14		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 15		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 16		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 17		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 18		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 19		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 20		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 21		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 22		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 23		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 24		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 25		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 26		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 27		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 28		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 29		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes
Ad 30		❑1 Regular ❑2 Menthol ❑3 Both		1 Yes

Product key:

1 Marlboro cigarettes
2 Newport (red or green) cigarettes
3 Camel cigarettes
4 Other cigarette brands
5 Chew
6 Snus

Cigarette flavor:

Answer only when recording ads for cigarettes.

Leave blank when recording ads for chew and snus.

Promo key:

0 None
1 Special price
2 Multi-pack discount
3 Both (Special price and Multi-pack discount)

18) Are there additional interior tobacco ads? ❑0 No ❑1 Yes (If yes, please attach additional sheet to list them.)

Store ID: ___________

Interior Tobacco Displays

19) Check box if there are **no** interior tobacco displays: ❑0 (skip to 24)

For each interior display, record:

	20) Product	21) Promo type	22) Near counter
Display 1			1 Yes
Display 2			1 Yes
Display 3			1 Yes
Display 4			1 Yes
Display 5			1 Yes
Display 6			1 Yes
Display 7			1 Yes
Display 8			1 Yes
Display 9			1 Yes
Display 10			1 Yes
Display 11			1 Yes
Display 12			1 Yes
Display 13			1 Yes
Display 14			1 Yes
Display 15			1 Yes
Display 16			1 Yes
Display 17			1 Yes
Display 18			1 Yes
Display 19			1 Yes
Display 20			1 Yes
Display 21			1 Yes
Display 22			1 Yes
Display 23			1 Yes
Display 24			1 Yes
Display 25			1 Yes

Product key:
1 Marlboro cigarettes
2 Newport (red or green) cigarettes
3 Camel cigarettes
4 Other cigarette brands
5 Chew
6 Snus

Promo key:
0 None
1 Special price
2 Multi-pack discount
3 Both (Special price and Multi-pack discount)

23) Are there additional interior tobacco displays? ❑0 No ❑1 Yes (If yes, please attach additional sheet to list them.)

Interior Shelving Units

		CIGARETTES			
	None	MARLBORO	NEWPORT	CAMEL	OTHER
24) Number by brand - **near** counter	❑0				
25) Number by brand - **away** from counter	❑0				

Overall Interior Characteristics

26) Any tobacco ads near candy?

a) ads for cigarettes near candy? ❑0 No ❑1 Yes

b) ads for other tobacco products near candy? ❑0 No ❑1 Yes

Store ID: ___________

		CIGARETTES				SMOKELESS	
	None	MARLBORO	NEWPORT	CAMEL	OTHER	CHEW	SNUS
27) Any interior ads at or below 3 ft?	☐0						
28) Any displays at or below 3 ft?	☐0						
29) Any functional items at or below 3 ft?	☐0						

Price for Cigarettes (regular hard pack) – lowest pack price for single pack and multi-pack purchases

	Marlboro	Newport (green)	Camel	Basic	Doral
					
30) Brand not sold	☐0	☐0	☐0	☐0	☐0
Price to purchase a single pack					
31) Single pack price (enter ".09" if store sells brand but price is unavailable)	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _
32) Sale or special price	☐0 No ☐1 Yes	☐0 No ☐1 Yes	☐0 No ☐1 Yes	☐0 No ☐1 Yes	☐0 No ☐1 Yes
33) Sales tax included	☐0 No ☐1 Yes	☐0 No ☐1 Yes	☐0 No ☐1 Yes	☐0 No ☐1 Yes	☐0 No ☐1 Yes
Lowest pack price from a multi-pack discount (if any)					
34) Multi-pack discount	☐0 None ☐1 Buy # get # free ☐2 Other	☐0 None ☐1 Buy # get # free ☐2 Other	☐0 None ☐1 Buy # get # free ☐2 Other		
35) Multi-pack purchase price (enter ".09" if store sells brand but price is unavailable)	$ _ _ . _ _	$ _ _ . _ _	$ _ _ . _ _		
36) Number of packs	# ____ packs	# ____ packs	# ____ packs		
37) Sales tax included	☐0 No ☐1 Yes	☐0 No ☐1 Yes	☐0 No ☐1 Yes		

D. STORE EXTERIOR

Are these items present?

38) We Card	☐0 No	☐1 Yes
39) 1-800-5ASK4ID	☐0 No	☐1 Yes
40) Tobacco ads at or below 3 ft	☐0 No	☐1 Yes
41) Tobacco functional items at or below 3 ft	☐0 No	☐1 Yes

Store ID: ___________

Exterior Functional Items

	None	CIGARETTES				SMOKELESS	
		MARLBORO	NEWPORT	CAMEL	OTHER	CHEW	SNUS
42) Number by brand	☐0						

Exterior Tobacco Ads

43) There are no exterior signs for study brands:☐ (skip to 43)

For each exterior sign, record:

	44) Product	45) Cigarette flavor	46) Promo type	47) Location
Ad 1		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 2		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 3		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 4		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 5		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 6		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 7		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 8		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 9		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 10		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 11		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 12		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 13		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 14		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 15		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 16		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 17		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 18		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 19		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 20		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 21		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 22		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 23		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 24		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 25		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 26		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 27		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 28		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 29		☐1 Regular ☐2 Menthol ☐3 Both		
Ad 30		☐1 Regular ☐2 Menthol ☐3 Both		

Product key:

1 Marlboro cigarettes
2 Newport (red or green) cigarettes
3 Camel cigarettes
4 Other cigarette brands
5 Chew
6 Snus

Cigarette flavor:

Answer only when recording ads for cigarettes.

Leave blank when recording ads for chew and snus.

Promo key:

0 None
1 Special price
2 Multi-pack discount
3 Both (Special price and Multi-pack discount)

Location key:

1 Window/door
2 Other (gas pump, sidewalk, building side)

48) Are there additional exterior cigarette signs? ☐0 No ☐1 Yes (If yes, attach additional sheet.)

49) Disposition:
☐1 Completed
☐2 Partial (comment on cover)
☐3 Denied
☐4 No cigarettes
☐5 Store not found
☐6 Store closed
☐7 Store not visited

Store ID: ___________

END OF SURVEY